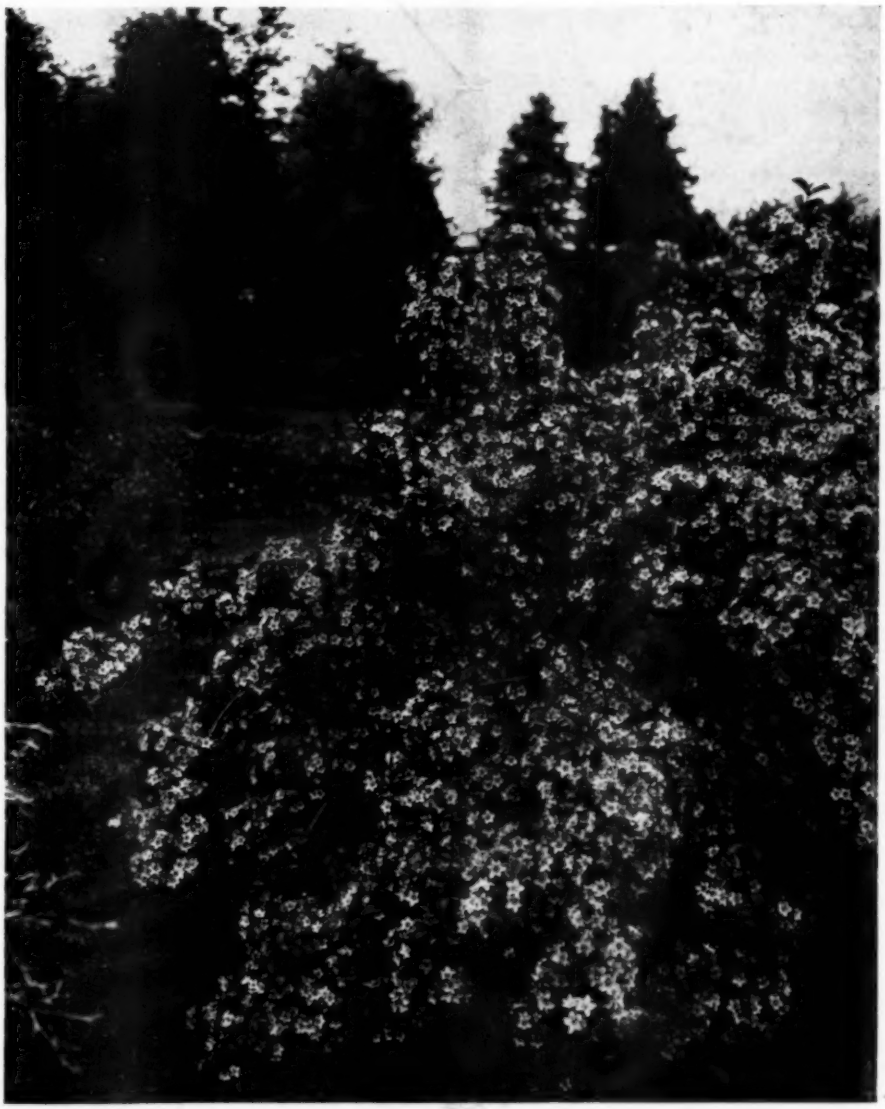
AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

MARCH 15, 1938



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Weigela Gustave Mallet

Pruning and Cabling Shade Trees
Identifying the Lindens
Some Beautiful Borages
Cost Accounting in the Nursery

AMERICAN NURSERYMAN

Chief Exponent of the Nursery Trade

F. R. KILNER, Editor

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AFTER FIFTEEN YEARS!

Before Congress embarks further on the various projects to furnish trees to farmers, attention might be given to a problem the United States Department of Agriculture still faces. It might be well to consider whether the history of free trees will not duplicate that of free seeds.

This is brought to the editor's mind by a press dispatch from the Department of Agriculture under date of March 2 headed: "Ten Thousand Times No to Requests for Free Seeds!" It is accompanied by the explanatory note: "This is a slight revision of a story we sent you two years ago under the same head. Letters are pouring in again this year."

The flow of "free seed" letters is beginning again, states the press dispatch, although for fifteen years the United States Department of Agriculture has been trying to convince 130,000,000 people that it has no free seeds or plants. "Yet each year," it continues, "as spring approaches, thousands of requests pour in from farms, suburbs and penthouses. And all the writers of these letters meet disappointment."

Prior to 1923 there was an annual appropriation for free seeds for congressional distribution through the Department of Agriculture, and since this discontinuance—which followed years of agitation and ridicule—many thousands of gardeners annually ask Uncle Sam to play Santa Claus again. We wonder what it has cost the Department of Agriculture in the past fifteen years to say no to all the disappointed gardeners.

But perhaps next year the Department of Agriculture can refer the inquirers for free seeds to the forest service to obtain free trees!

LANDSCAPE COURSE.

Announcement comes from the University of Wisconsin that its extension division will offer a course in landscape design. The purpose is to enable home-owners to formulate such plans and to stimulate their application, with consequent improvement in the adornment of home sites.

"A unique feature of the course is the adaptation of the instruction to the special needs of an individual project," reads the announcement. "Each student builds a part of his work around his home landscaping problems and receives help in dealing with them artistically and economically."

If such a course teaches some of the home-owners of Wisconsin to plan and plant their grounds better, that will be something. If it also enables some of them to distinguish between competent landscape designers and the numerous half-baked practitioners, it will do even more. Only persons of much experience know how vast a subject is landscape designing, calling for artistic ability, creative capacity, knowledge of architecture and familiarity with plant materials—the last-named being most important, though often least recognized.

WEIGELA GUSTAVE MALLET.

Nurserymen in the northern states who are looking for a more dependable weigela should try Gustave Mallet, illustrated on the front cover, as it has proved itself under extremely severe and trying conditions to be head and shoulders above many other hybrid garden forms. In a report on the winter hardiness of shrubs at Grand Rapids, Mich., during the winter of 1933-34, when a minimum temperature of 24 degrees below zero Fahrenheit, accompanied by a long period of subzero weather with no snow protection, was experienced, J. E. Wilde states that Gustave Mallet was the only variety of the weigela group to show no injury and bloom freely the succeeding season. Its flowers are rosy red and desirable.

The injury that winter was intensified by a limited moisture supply in the soil the preceding autumn and a prolonged drought period in the early part of the ensuing spring. Despite this extraordinary combination of conditions, Gustave Mallet came through and flowered freely, whereas specimens of Eva Rathke and Candida, the snow weigela, were either killed outright or to the ground. The tops of Abel Carriere, nana variegata, luteo-marginata, Vanhouttei, Hendersonii, Stelzneri and Chameleon were killed back from ten to fifty per cent. Certain other shrubs, such as the forsythias, lost their blossom buds, but showed no additional injury. Still others, the hybrid perpetual roses and the beauty bush, lost practically all of their blossom-bearing wood.

Little further need be said about this weigela, except perhaps that it grows taller than Eva Rathke, being more like rosea and Candida in that respect. Otherwise, it should be handled in the same way as all weigelas, being easily propagated by means of softwood cuttings taken in summer or by short hardwood cuttings taken in late winter and rooted in a greenhouse, with bottom heat.

The use of Gustave Mallet may enable nurserymen to plant weigelas considerably farther north than was heretofore considered feasible. It is worth testing out, anyway.

WHEREAS in 1905 a man in Santa Barbara sold avocados from a single tree in his garden for $5 apiece, last year 8,517,000 pounds of these fruits were moved from 13,000 acres of trees in southern California at a retail price as low as 15 cents each.

THE filbert tree will withstand temperatures well below zero, but the female flower may be injured if the temperature drops below 12 degrees. Since the flower buds open in late fall and early winter and remain open for several weeks, the occurrence of temperatures below 12 degrees during this period is a limiting factor in filbert culture.

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Pruning and Cabling Shade Trees

Methods and Materials Used in Preservation of Ornamental Trees — By William E. Gunesch, of Colorado State College

"Why do we prune ornamental trees?" Is it because some enterprising individual saw an opportunity to make a livelihood rendering this service? Not entirely, although he has played his part. We prune to maintain and improve the beauty of our trees. The deadwood is the first thing we see. It must be removed. Then possibly we may not like the shape of the tree. We want more symmetry; so we remove limbs to give the tree shape. Or maybe a limb is brushing the house; so we cut it off. The tree may not appear healthy; so it is pruned to increase vigor. Again, when transplanting it is necessary to try and balance the top to the roots.

The equipment we need to do the job consists of a saw, hand pruner, pole saw, small bucket, small brush and coil of ¼-inch rope. For the larger cuts, I prefer to use an Atkins Universal No. 38 or a Disston No. D27 or No. 31 saw. Any good make of hand pruner such as Wiss is satisfactory. I prefer a combination tree trimmer and saw. The hole left by the removal of the blade is about ½ inch. Into it may be inserted a small brush with the handle whittled down. With this combination you can paint, with Bordeaux powder and raw oil, many small cuts from one position and also those that you could not reach otherwise. The bucket contains the wound-dressing and the rope is a means of fastening it while in the tree. The matter of using a life belt depends on the individual.

Often you hear the question, "What is the best time to prune?" To answer this question we might first consider what is the effect of pruning at different seasons. Pruning during the dormant season results in (a) increased vigor, by increasing amount of water at growing points; (b) increased efficiency in conduction of water and nutrients; (c) change in C/N ratio, as removing of branches removes some stored carbohydrates and balances top and root ratio, and (d) dwarfing, since leaf area is reduced and thus root growth is also reduced.

Pruning in early summer may result in the same effect as obtained in the dormant period, provided there is a prolonged season and an abundance of moisture. Delayed maturity also results. Midsummer pruning results in the most severe dwarfing. Late summer pruning produces about the same effect as that done in the dormant season except that maturity is delayed. In general, the best time to prune deciduous trees is in autumn or during the predormant or dormant period. However, there are some exceptions to the rule. Those trees which have a tendency to bleed, such as elm and maple, should be pruned in late winter or early spring. At this season callus growth is most rapid and the wound heals over more quickly. Although this practice is employed on those trees that bleed easily, the majority of other trees can stand autumn pruning. Late spring pruning usually results in cambium injury. Climbing up and down through the branches loosens the soft bark and often crushes the cambium cells. With these facts in mind, we can consider the question of where to prune.

The pruner must first size up the tree and determine whether it needs only thinning or reducing last year's growth, or both. The first operation should be the removal of all dead limbs and cross limbs that are rubbing together. Then, depending on the age of the tree, the rest of the necessary limbs should be reduced. In young deciduous trees the length of the branches should equal about one-third the total length of the tree. In middle-aged trees (15 years old) the top has naturally begun to flatten out. This makes for too dense a growth. The tree should be thinned out toward the outside. On old trees, only prune those that are capable of recuperating.

How to prune involves the position of the cut. A person with a good eye for estimating angles will never have any trouble. The cut should be made flush with the trunk or with a slight outward slant toward the base of the cut. Never cut a limb off three or four inches away from the trunk. The stubs left are unsightly and make a tree appear knobby. Stubs do not heal over readily and become ideal areas for fungous infection and insect attacks. The removal of large limbs should be done with a rope or prop by first making an undercut and then cutting off the limb a short distance out from the undercut. Above all, do not be in a hurry. Large limbs are more easily handled by making three or four cuts.

There is a logical sequence of operations in pruning any tree. I have found it time-saving to begin at the top and work down. In large

trees, where the limbs are far apart, every limb may be an aid in attaining a position from which to prune. Thus if the limbs are cut off as you climb up, the topmost regions of the tree might be inaccessible. Even if you did get up high enough, there is always the problem of getting down. By starting at the top and working down you can loosen any removed branches that have been caught in their fall and held by the branches below. Thus when you reach the lowest branch you have a tree clean of loose branches.

The next step is the cut. The important point is be sure you have a firm footing before you start and then take it easy. Sawing is a job that is accomplished most easily by working steadily. After the cut is made, it should be painted. Any tar roofing is satisfactory, provided it does not contain too much creosote or any turpentine.

The suggestion, "Be careful!" cannot be overemphasized even to the veteran pruner. It is not necessary to take chances. The pruner should wear rubber-soled shoes and never use tree climbers. Tennis shoes are satisfactory if they are comfortable. Always be on the lookout for woodpecker and sapsucker holes and for loose bark. These are almost sure indications of bore-infested wood. Beware of brittle wood. Trees that bear watching are willow, locust, cottonwood, poplar and Chinese elm.

You have heard people remark, upon seeing a tree in which one of the main limbs has been broken, "Isn't that a shame! The shape of the tree is ruined." Yet this tragedy might have been prevented if the limb had been properly cabled or braced. Cabling is the stretching of twisted wires between two limbs. Bracing is mainly concerned with giving additional support at the crotch.

Cabling and bracing are essential to the protection of certain deciduous trees. Wind, snow and sleet usually do the most damage. The twisting and swaying of the limbs weakens them in the crotch. The additional weight of sleet causes stresses and strains that finally result in the splitting apart of the two limbs. Certain trees, because of their branching habit, are more susceptible to splitting. Elms are susceptible because of the narrow angle their limbs make at the crotch.

Cabling must be permanent. It must last the life of the tree. Therefore, the material used must be able to stand any weather. The equipment necessary for cabling is as follows: ¼ and ½-inch 7-strand double-galvanized cable; ¼ and ⅜-inch wrought-steel, galvanized thimbles, open at one end; ¼, ⅜ and ½-inch welded-eye eyebolts; ⅜ and ½-inch lag screw hooks or a cheaper galvanized porch hook.

If the cables are not fastened by wrapping, cable clips are necessary.

The actual procedure in cabling varies with the person doing the work. Survey the tree first from the ground and then climb the tree and study its branching habit before deciding where to place the cable to obtain maximum support. A fair rule to follow is to place the cable up about two-thirds of the distance between the crotch and the tip of the branches. Next select the right weight of material. If the limbs are small—one inch to six inches in diameter—a screw hook can be used. Larger limbs will require an eyebolt. If you use screw hooks, be sure that they have a long enough shank, so that they will not pull out. The hook should be about one-eighth inch larger than the cable being used. A hole one-sixteenth inch smaller than the hook is bored at right angles to the limb. The hooks are screwed down so that the open end of the hook is within one-half inch of the bark. A thimble is placed on the hook, and it is then screwed in until the open end touches the bark. Another hook is similarly installed in the opposite limb.

One end of the cable is now bent around the thimble and fastened either by wrapping or with a cable clip. The limbs are drawn together with a rope. The remaining cable is measured so that it will reach across the space separating the two limbs and then cut off, leaving enough over to bend around the other thimble. When the rope is released the limbs snap back, drawing the cable taut. Care must be taken that the limbs are not drawn up too much. They should not be crowded at the top.

Eyebolts are used when larger limbs —six inches and up—are to be cabled. A hole is bored through the limb at right angles. The bolt is inserted, and a washer and nut screwed on the opposite end as it protrudes from the limb. The washer is countersunk so that it is flush with the cambium. About one and one-half to two inches of the bolt on the eye end is permitted to stick out from the limb. In like manner an eyebolt is placed in the opposite limb. The cable is now attached to the eye of each bolt. When the nuts are tightened the 2-inch shank of bolt that was allowed to protrude is taken up and the limbs are drawn together. The eye should be sunk slightly into the bark to prevent its twisting. The threaded end of the bolt that protrudes past the nut is cut off flush with the nut. It is then dented at the edge with a cold chisel. The nut, washer and eyebolt should be painted before the job is considered complete.

Box cabling requires less cable. The cables are placed higher in the tree and in such a shape as to resemble a square.

The most satisfactory material to use for bracing a crotch is log thread rod. In using this material it is essential to have a good side wall of wood. About three inches of side wall is necessary for ½-inch rod and eight inches of side wall for 1-inch rod. One rod should be placed through the split crotch and one or two rods above the crotch. The hole into which the rod is to be screwed should be one-sixteenth inch smaller than the rod. After the rod is screwed through into the opposite limb sufficient to hold, the thread is marked flush with the bark. Then back the rod out a short distance, estimate the depth to the cambium and subtract this from the mark on the thread. Then cut the rod practically through, but do not permit it to break. Now by holding the remaining rod level and turning it slowly, you can insert it to its original depth. Then by wiggling it a little, you can break the rod off. The small hole to the cambium is filled with tar or asphalt, and the job is complete. No nuts or washers appear on the outside of the tree.

A few don'ts for cablers may be helpful:

1. Don't attempt the impossible.
2. Don't fail securely to fasten your cable to the hooks.
3. Don't place cable too low in the angle of the limbs to be cabled.
4. Don't draw limbs up into an unnatural position.
5. Don't place hooks at relatively the same position in the same limb.
6. Don't use screws with damaged threads.
7. Don't use a bit that is the same size as the hook.
8. Don't fasten a large limb to a much smaller limb.

Identifying the Lindens

Fourth in Series of Articles Discusses Characteristics of the Common Linden, Tilia Vulgaris—By Leon Croizat, of the Arnold Arboretum

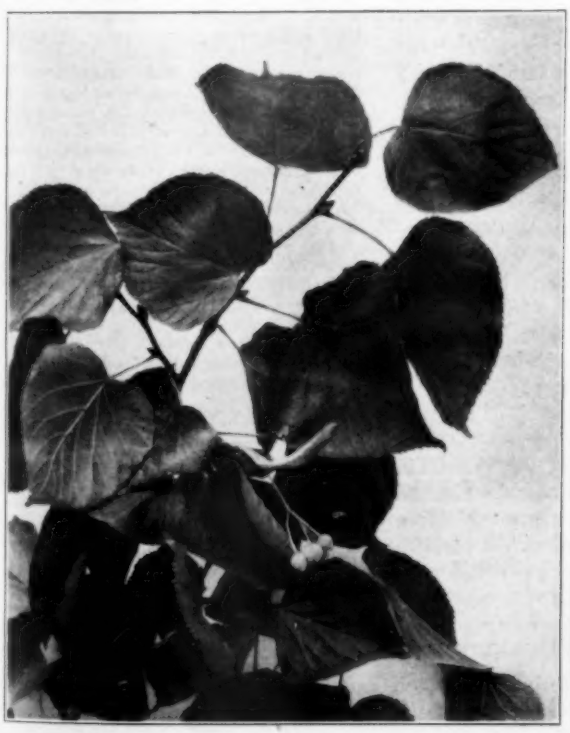
All the works of horticultural reference include Tilia vulgaris among the commonly cultivated lindens of European origin. Even a casual reader soon learns, however, that different authors entertain different notions on the subject of this plant. Some writers claim that the common European linden or, more briefly, common linden, Tilia vulgaris, is the same as the red linden, Tilia rubra, Tilia caucasica or Tilia dasystyla. Other authors, who are now in majority, believe the contrary to be true. About the correct botanical name of these lindens considerable difference of opinion obtains. It is probable that, strictly speaking, neither Tilia vulgaris nor Tilia rubra is correct, as I have pointed out in a previous article. A study of the issue is in progress. The result may be published before the end of the year.

The argument about appropriate names—let it be frankly admitted—can interest only to some extent the nurseryman, the landscape architect and persons in general who professionally or commercially deal with lindens. It is the practical side of the issue that counts. Are the lindens concerned in the argument two or one? Is anything to be gained by the knowledge that a certain tree is true Tilia vulgaris, and not Tilia rubra or any other linden?

The answer to this query is yes. There is something to be gained by this knowledge for the good reason that Tilia vulgaris and Tilia rubra are different plants. If they are confused and planted together, as often happens, the result in due time is shown to be a serious loss of the balance or uniformity of design that is sought by a good planting plan. No connoisseur worth his salt can afford to ignore the differences between these two lindens.

Success or failure in planting and landscaping depends on a great many factors that have nothing to do with the material itself. Naturally, it is dangerous to tender advice and to praise or disparage this or that species on personal experience or on general grounds. A tree commended for its habit, for instance, may prove most disappointing in places where it is denied the opportunity of growing to its best. However, as my own opinion I may state that, all conditions being equal, I should rather plant a common linden than any other linden of similar kind. I should not mind, either, to pay something more in order to be certain that I get this linden and no other.

Tilia vulgaris is a hybrid, and it occurs in at least three forms, which are but slightly different in size and hairiness of the leaf. All these forms, so far as I have seen them in cultivation, have the same habit. This habit I believe to be a unique combination of characters that may well be called opposite. In the common linden that has reached its full development the trunk does not break into more than two or three main leaders, which tend to grow fairly close together; the sprays interlock tightly, and the leaves all turn the same way. These three characters



Tilia Vulgaris.

Tilia Rubra.

give a columnar compact crown. The effect of heaviness that results from this habit is balanced and happily offset by the tier-like disposition of the gracefully arching main limbs. Nothing like it is found in the red linden, which so frequently is mistaken for Tilia vulgaris. The crown of the red linden is more or less regularly pyramidal on account of the trunk breaking in this species in several to many main leaders that tend to scatter. The habit difference between the common and the red linden is fundamental, quite like the difference that lovers of dogs and horses are agreed to call "of breed." To notice it but once means never to forget it.

It is the habit that in my understanding makes the common linden superior to the red. In other respects they closely agree. They stand drought somewhat better than Tilia platyphyllos, but not exceedingly well, and it may be suspected that Tilia rubra has a slight edge over Tilia vulgaris in city planting or for use in places that are not well watered the year around. The rate of growth is about the same and, so far as I have been able to learn, they transplant equally well.

Other characters that distinguish the common from the red linden will be given in the article that is to deal with the latter species. Reference must be made to the illustrations of the common linden and of the red linden that accompany this article.

As I have said, Tilia vulgaris is a hybrid of the small-leaved linden, Tilia cordata, with the hairy linden, Tilia platyphyllos. It differs enough from both its parent not to be confused with either. On the whole, however, it resembles more Tilia cordata than Tilia platyphyllos.

Of Tilia cordata the common linden has the general outline of the leaf, the thin leaf texture, the weakly drawn small nerves. It further resembles this species in the color and in the size of its whitish flower. It differs for the rest as follows:

(a) Flower cluster—The average flower cluster of Tilia vulgaris numbers from five to six flowers; that of Tilia cordata from eight to ten. The common linden seldom bears ripe fruits; the small-leaved linden, on the contrary, bears them in great quantities.

(b) Hairiness of the leaf—The adult leaf of Tilia cordata is hairless underneath, except for tufts of "wool" at the fork of the nerves. That of Tilia vulgaris has at least scattered hairs, some single like those of Tilia platyphyllos, others star-shaped. The margin of the leaf is hairy in Tilia vulgaris, hairless in Tilia cordata.

(c) Size and color of leaf—On the average about two to two and one-half inches long in Tilia cordata, three to five inches in Tilia vulgaris. The underface of the adult leaf of Tilia vulgaris often turns a peculiar color, somewhat like copper. The leaf of Tilia cordata is bloomy underneath, bluish or very faintly ashen-white, at least at the beginning of the season.

(d) Habit—In Tilia cordata the main limbs tend to shoot forth straight and the bearing of the mature tree, mostly on this account, is rather stiff. The habit of Tilia vulgaris, as we already know, is altogether different.

(e) Twig and bud in winter—The bud of the common linden is distinctly pointed, in some cases up to three-quarters of an inch long, never rounded and yellow green like that of Tilia cordata. The underside of the last season's growth of the common linden persists green or greenish throughout the winter. Tilia cordata, as it was described in the previous article, is altogether different in these respects.

Tilia platyphyllos and Tilia vulgaris can hardly be confused on account of the many characters that set them apart. The fruit, for instance, is woody and hard in Tilia platyphyllos, leathery and weak-shelled in Tilia vulgaris. Tilia platyphyllos has no star-shaped hairs on its leaf; Tilia vulgaris has at least some of them. The habit and the color of the bark, also, are not the same. Tilia vulgaris has a darker bark than Tilia platyphyllos, without the peculiar "diamonds" of the latter species.

The possibility of mistaking Tilia vulgaris for Tilia euchlora or for Tilia flaccida is remote. Notes of identification, nevertheless, will be given in the article that will describe those lindens.

EXAMINE TREE WORKERS.

Since the Connecticut law requiring commercial tree workers to qualify for certification or licenses became effective in 1919, more than 500 persons have applied for examinations and 468 certificates have been issued. At present there are 258 active certificates in the state, 218 of which are regular and forty limited. Limited means that the holder is qualified to do only specified types of work, such as spraying.

Members of the examining board are W. E. Britton, state entomologist, chairman; W. O. Filley, forester, and E. M. Stoddard, botanist—all members of the agricultural experiment station staff. There are no set dates for holding examinations, but there are four sessions each year, falling approximately in mid-February, May, August and November. Station circular 120 contains the law, requirements and a list of active certificate holders.

SWAN SONG.

Since he had sold his nursery previously, D. P. Henegar's address as president of the Tennessee Nurserymen's Association at its convention last month was in the nature of a swan song. Although, he said, he "could explode on the gloomy, pessimistic and least worth-while aspects of the nursery business without fear of its back-firing in a commercial way," instead he asserted:

> The nursery business rightly conducted is one of the most interesting and pleasant of occupations—one that brings to the surface the heart, soul and quality of manhood within those thus engaged. The products of but few other trades or businesses reflect the manhood of the management as do the products of the nurserymen. Honest endeavor on the part of the nurseryman is needed for the protection of his customers, perhaps more than in almost any other business, for the customer makes his purchase more in faith than on knowledge, because the buying public is not, as a rule, familiar with varieties or where or what should be planted. They depend on the seller to do the job well, and only by so doing can the nurseryman hope to build a business which can be looked upon as an asset. It is the duty of the nurserymen to keep and protect the faith imposed and to discourage, through organized effort, those who have a warped conception of fairness and honesty.

EFFECTS of various nutrient deficiencies upon the growth of apple trees, as indicated by recent investigations at New Brunswick, and sound principles for orchard nutrition are set forth in bulletin 626 of the New Jersey agricultural experiment station, entitled "Nutrition of Apple Trees," by M. A. Blake, G. T. Nightingale and O. W. Davidson. Seven pages in colors depict the discoloration of leaves showing deficiencies.

Some Beautiful Borages

Blue Flowers Are Characteristic of Several Genera of Value in the Hardy Garden—By C. W. Wood

Some plant families are rich in reds, others are noted for their beautiful yellows, and a few are wealthy in that most desired of all flower colors, blue. The borage family is numbered among the last-named group. It is a large group, composed of eighty-five genera and more than 1,500 species, many of which belong to the tropics and have no place in our present enumeration, but there are enough members to satisfy the average need of blue color in the hardy garden. In addition to their desirability as to color, many of them are endeared in gardeners' memories because of their earlier associations in the art of simples, where species like comfrey (Symphytum officinale), borage (Borago officinalis), lungwort (Pulmonaria officinalis) and heliotrope (Heliotropium europæum) played a prominent part. Also the roots of at least one species, Alkanna tinctoria, yielded a dye of commercial importance before the days of synthetic products.

Perhaps the best known in the group is anchusa, and its reputation in this country seems to rest on two species, A. italica and A. myosotidiflora. The first of these is too well known to need extended comment, but growers should be cautioned that they are missing much good material if they neglect the newer forms which are now available in seeds at least. Dropmore variety was a splendid achievement in its lovely deep blue flowers and continues to hold favor among gardeners. A newer variety, Opal, is essentially a light blue Dropmore, giving a wider range of color in these 4-foot plants. Morning Glory, a 3-foot plant carrying large, deep blue flowers, was the outstanding performer of this group in my garden last year, while Pride of Dover was perhaps the loveliest color in its beautiful sky-blue. The readiest means of increase is, of course, from seeds and that is the method to follow if one has to meet competitive prices, but, if one has a particularly choice specimen, it may be propagated from root cuttings after the manner of oriental poppies.

The forget-me-not-flowered anchusa, A. myosotidiflora, is, because of its many excellent qualities, a popular plant, but more plants would be sold if more growers had them to show their customers. Growing to a height of fifteen inches and producing an abundance of blue during April and May, this anchusa is not only a good garden ornament, but is also a splendid cutting subject. It does best for me in part shade and is propagated from seeds.

I have grown a number of other anchusas, none of which have been really exciting unless A. procera is excepted. It is a stately plant, as the specific name indicates, growing six feet or more in height under good culture and, although its flowers are rather small, it produces them quite plentifully throughout the summer, making a good impression in the garden where plants of that height are needed. And it is reliably perennial with me, something that A. italica never is.

The prophet flower, Arnebia echioides, is not often seen in American gardens, much to our loss, because it is an excellent ornament for early spring decoration. One reads of its blooming from May until November in England, but the period seldom covers more than late April, May and early June in the middle west. European growers usually recommend giving the plant full sun, but that is rather trying under our hot summer sun. Here it does much better in shade, at least from noon onward, and is especially good on a north slope or north wall. It makes a mass of lovely green leaves, which serve as a foundation for a number of 8-inch to 12-inch stems in early spring, each bearing a scorpioid raceme of yellow flowers. These have five black spots in the throat, which fade with age, leaving the flower a uniform pale yellow. Although this plant comes from southwestern Asia, it is quite hardy and should go safely through the winter in most sections, especially if it gets a blanket of snow. It may be grown from seeds without difficulty, and Bailey also mentions root cuttings.

If Lindelofia longiflora, which is in the trade as L. spectabilis, is a sample of what the genus is as a whole, I should like to see the others. In fact, one reads about other species as being even more handsome than this one, but they do not appear to be in cultivation. According to the botanists, lindelofia is closely allied to the better known cynoglossum, being mainly separated from the latter by minor characters of flower construction. From the garden standpoint, L. longiflora is much more distinctive and desirable than any cynoglossum I have ever grown. It makes a bold mass of comfrey-like leaves, from which rise 18-inch flowering stems, bearing at each node clusters of long, tubular bells, pink in the bud, like mertensias, but opening a bright indigo shade. In the garden it does best in light shade in a soil which has been enriched with leaf mold, but it grows well in the ordinary nursery bed where it receives an occasional watering during dry periods. Unfortunately, it is not quite hardy in northern Michigan in snowless winters unless it is in a well protected spot. It comes readily from seeds and has much promise as a commercial plant.

The genus lithospermum contains not a little beauty for our gardens, notwithstanding the fact that some of the early chroniclers of garden lore passed them by with the notation "of minor importance." For example, we should have to look long and far to find a lovelier picture than a plant of L. prostratum Heavenly Blue, when it is smothered under a canopy of sky-blue flowers. And a group of our puccoon, L. canescens, is not hard to look at. The gromwells, so far as my experience goes, are not difficult to handle under garden conditions, accommodating themselves to a number of situations and many different types of soils. They are, in fact, so tractable they may be enjoyed by any gardener who is willing to exercise a little thought and care, provided, of course, that the tenderer kinds are not given more cold than their constitutions are made to endure. Fortunately, all the good native kinds that I have grown give no concern on that score, and most of the foreign species which one is apt to find in regular trade channels are hardy in all but the coldest parts of the country.

The former were given extended notice in the series on native plants which appeared in these columns last year and need not be repeated now, but brief attention will be paid the exotic ones.

The first one of the latter which comes to mind is quite likely to be that favorite of pre-quarantine days, L. prostratum Heavenly Blue. We should rejoice that it is again available, for it is one of the loveliest of all garden plants. I have seen three different plants in American nurseries under this label, all of which are good plants, but the two impostors are not to be compared with Heavenly Blue. The true plant forms a mat of dark green, lanceolate leaves, four to six inches high, and produces a carpet of large, sky-blue flowers through the spring and early summer and perhaps again in autumn if it is especially favored in its surroundings. L. fruticosum, which is given in the floras as a synonym of the next preceding, differs from it from the garden standpoint in having longer and narrower leaves in addition to its deep blue flowers. Both are splendid plants and should become a part of every local nursery in sections where they prove to be reliably hardy. The limits of their range are unknown to me, and the literature is not enlightening. L. fruticosum is definitely not hardy in northern Michigan, and I should not expect it to be so north of Chicago in the middle west. Heavenly Blue goes through our winters in excellent condition, if we have plenty of snow, but suffers badly during the usual freezing and thawing of spring. It would probably do well in most sections if it were handled with those points in mind. It gives best results in an acid soil and in a situation—I am speaking now of midwest conditions—that is shielded from the afternoon sun. The sky-blue color is not to be depended upon when plants are grown from seeds, and so we have to use vegetative reproduction. Happily, that is easily accomplished by means of cuttings, grown along in pots during their early stages.

The plant most often seen erroneously carrying the name of Heavenly Blue is really L. purpureo-cæruleum. This is a plant so distinct from either of the foregoing that there is really little cause for the mistake unless it is mere carelessness. The present species sends out a number of long, procumbent stems, often the length of three feet, which are densely clothed in rather large, hairy, lanceolate leaves. From these arise quite erect flower stems to a height of eight or ten inches, bearing forked cymes of blue and pinkish purple flowers in spring. This is a woodland plant and needs shade in this climate. It is easily grown from seeds or cuttings and is hardy.

Gaston's gromwell, L. Gastonii, is like prostratum in that it is not reliably hardy with me, but is entirely unlike it in its cultural needs. It requires lime, instead of the acid soil which L. prostratum needs. It should have, however, some shade during the hottest part of the day, and it did best for me in a leafy soil. It is a bushy little perennial of a height of eight inches, clothed in rough, hairy, lance-shaped leaves, and bears sky-blue flowers in clusters in early summer.

I have had several other gromwells in my test garden, most of which would make desirable additions to our garden furnishings, but there is scarcely room to give them all special mention now. I should like to include two little herbs which botanists know as moltkia, but which we of gardens call L. petræum and L. graminifolium. The last of these makes ashy tufts of grass-like leaves, over which appear cymes of bright blue flowers, tinged pink, during June and July. The first-named is a little shrublet of about the same height, according to the authorities, though it is seldom over half that in my dry, sandy soil, and it bears sprays of violet blue flowers in July. Both are easy to grow in ordinary soil and have been hardy in my garden during our most severe winters. Truth prompts me to add, however, that they have been in a part where snow always covers them from early until late.

[To be continued]

Charles Hess.

NEW JERSEY PRESIDENT.

The energy and executive capacity which he has shown as president of the North Jersey Metropolitan Nurserymen's Association led to the election of Charles Hess as president of the New Jersey Nurserymen's Association in January of this year. He promptly went into action, calling a meeting of the executive committee the latter part of February to consider several matters in the promotion of nurserymen's interests in the state. One was a proposal to petition the state soil conservation committee to take nursery stock out of the neutral class and transfer it to the vegetable class, where are flowering plants and bulbs, so that nurserymen might earn payment for carrying out the same soil conservation practices that other farmers are being paid for. Another was an attempt to have nurserymen included as farmers under the motor vehicle act giving half rates to producers of food products. Another is an attempt to have farmers exempt from the act to limit the hours of service of operators of motor vehicles.

As a member of the executive committee of his county board of agriculture, Mr. Hess has kept in touch with many matters affecting nurserymen and has been active in their behalf. He urges representation of nurserymen on the board of the agricultural committee in each county of the state.

Charles Hess went into business on his own account as Hess' Nurseries, Mountainview, N. J., in 1922, after thorough training. Born at Rotterdam, Holland, December 23, 1892, he graduated from the state horticultural school at Boskoop, Holland, in March, 1911, and came to the United States the same spring. After working a short time in a North Dakota nursery, he went to Wilmington, N. C., where he was connected with the Tidewater Power Co. until 1917, starting a nursery to provide material for landscaping the company's property. For five years subsequently he worked in various nurseries in New York and New Jersey before starting in business for himself. He was married June 25, 1914, and has two sons, the elder in business with him.

Cost Accounting in the Nursery

Determination of Costs Desirable in the Nursery Business, Presented at Ohio Short Course—By Russell M. Bettes, of Princeton Nurseries

Some time ago, when I was connected with the New Jersey state department of agriculture, I was given the assignment to make a survey of the costs in production of nursery stock. Most surveys are a simple matter to execute, because they usually just take an inventory of acreages, production, prices, etc., and, therefore, to the inexperienced this job that was turned over to me would also appear on the face of it to involve only a study of the general practices and costs among the leading nurserymen, which, when tabulated and averaged in the usual manner, would give us the desired information.

Having been brought up and trained in the nursery and landscape gardening field, I was fully aware of the complexity of the nursery business and the difficulties that I should run up against in securing comparable information on the many operations going into the production of nursery stock. The thing that complicates such a reckoning and so often makes us throw up our hands when trying to fathom the nursery costs is the fact that all expenses are not involved in growing plants. A large proportion goes into the selling and handling departments of the work. After spending the best part of a year on this survey, I was convinced that the resultant data and averages could not be used as a true cross section of nursery operation and could not be applied directly in any one nursery without certain adaptations based on the individual's own cost calculations. Therefore, I shall only attempt to give you some of the conclusions that we have come to and relate some of the experiences that we have had in this work.

Departments of Work.

In considering nursery costs we must start with a division of expenses which follows along with the natural division of the work in the nursery.

The nursery first grows plants; then exerts every effort to sell as many of those plants as possible. When the sales are made, the plants must be dug, often packed and finally delivered. Your work usually stops there unless you do a landscape business, which means that you not only deliver the plants, but you plant them for a client and may even go back later to maintain them. That is your work plan. Your departments of work and expenses in the accounting system then are: (1) Nursery, or growing department, (2) order department to fill orders, (3) packing department, (4) delivery department, (5) sales department (and you may have a landscape department), and finally you have a sixth general department into which you throw all expenses that you do not otherwise know what to do with, your office expenses, general maintenance, etc.

These are just the first divisions in accounting, the first steps in an accounting system. To illustrate the significance of separate cost studies in each divison, let us consider a practical application of cost knowledge to prices that material has been sold at in the past. We all know that during the depression years, now past history, it often occurred that sales were made with the idea of clearing some cash over and above the handling costs. Digging costs were doubly important and, along with packing, delivery and sales costs, made up the current expenses that must be cleared.

Mistakes were sometimes made. A good reliable nursery in New Jersey bid the United States government only a year and one-half ago, $1.10 for 5 to 6-foot white dogwood with a 24-inch ball. Let us analyze the current expenses necessary to bring each dogwood to its destination. The plant in the field we shall consider as worth nothing, because we need cash and we have figured it in this way. The average cost of digging each 24-inch balled plant we have found to be 80 cents under normal conditions and up to $1.40 when the ground is hard or gravelly. I know that this particular nursery's labor rates give them an above-average cost and we figured $1.17—92 cents for labor, 10 cents for burlap and rope and 15 cents for the use of trucks while digging and loading. Delivery was made with a 3-ton truck at a cost, with a driver, of $20 per load. Only seventeen plants, each weighing around 350 pounds, could be put on a load, so that delivery cost $1.18 per plant. Should we add a sales cost on top of this? We have already accounted for $2.35 on a $1.10 item.

For comparison I had the opportunity to see the recent bids for ten 3 to 4-inch elms for the same destination. These plants were specified to carry a 36-inch ball and platform. Thirteen out of seventeen bidders placed prices between $14 and $17. Let us roughly estimate the costs.

Without definitely knowing, we shall guess at a field value of each tree of $4 plus overhead accumulated for $2, or a total field value of $6. It will cost, on the average, $2.55 to fill the order—dig, ball and burlap, platform and load each tree. Delivery will probably again run $20 per load, if you have your own trucks, or $4 each for five trees on a 3-ton truck (1,200 pounds each). Selling expenses (to pay the salesmen's salaries, catalogue, etc.) have been with many ten per cent of the total sales. Let us charge, then, $1.50 for sales. The total is $14.05. At $15 plus there is $1 or more clear profit over and above the expenses that were incurred in the past to grow the trees. This is what we like to see. This also illustrates how your business and sales policy ties up with cost knowledge.

In this analysis you will notice we have assumed that we know what each division of the work would cost, or had cost in the past. To get back to cost finding, then, what type and how detailed a cost-accounting system will each of you have to go into in order to find out that the tree has cost $6, digging costs $2.55, etc.?

Methods of Determining Costs.

There are two methods of determination of these costs. The first method is a permanent accounting

system which ties in daily labor records with the book accounts in the office. The other method, and the one being practiced for survey purposes, is that which makes separate test observations of each job performed in the nursery. Both methods have their usefulness.

I have described before the work departments which are the first divisions in either cost-finding method. In order to have a better knowledge of the plants that are grown and sold, it is necessary to subdivide the nursery, or growing department into as many plant group departments as it seems desirable. The costs that will be charged against the growing end of the work will probably be about sixty per cent of the total expenses. Therefore it is a natural procedure from an accounting standpoint, as well, to break down so large an expense group.

This means that you will consider your business in coniferous evergreens separate from your business in broad-leaved, in shade trees, in flowering trees, in shrubs, in perennials and in any other specialty items that you grow in quantity. You will want to keep a separate account of your propagating department and, knowing the output, find your unit cost of producing lining-out stock and salable stock.

Let us illustrate now the type of records that would develop. If the nursery is so large that one man cannot record the time of each working employee, you will have to have a daily report from each foreman and the summary of all the foremen's records placed on a summary sheet of some type. Most of you, I believe, would just have to put down the total parts of days all the working men spent in each department.

This daily record is the foundation of a permanent cost-finding system. With it you not only will know at the end of a season how many dollars have been spent for labor in each division, but you will have a base in the labor distribution on which to apportion (or prorate) other general expense or overhead.

The books will do the rest. It will not require, either, any elaborate set of books. You will simply have the same divisions set up in your ledger. You will enter the proportions of the total labor bill against each division and also enter the materials that are used up in each division.

There will be many expenses, then, of a general nature and many others chargeable to the other work departments. I should not attempt to set up any standard accounting method. That is something that is an individual problem in each case, depending on the type of establishment, the physical set-up of the nursery departments and the desire of the nurseryman for more or less detailed information. The important thing is so to develop your accounts that you can, with some degree of accuracy, analyze your business and separate your business to know, for instance, that for the past year shrubs have not made money and evergreens have.

The general business account does not tell us directly what each species of evergreens has cost to grow, nor does it tell us anything about the separate jobs that have gone into production, such as cultivating, spraying and all the rest. It does tell us, however, that given the sales for 1936, sold at the price level of 1936, there has netted a profit of ten per cent. We also see, for example, that actually expenses of, say, $9,000 have just equaled total sales of $9,000 and that the profit is represented by the build-up of inventory of $1,000. It is presumed that this increased inventory of stock will be cashed in during later years.

An important thing to notice, also, is that the records requisite to such a summary account, include only total labor, total truck use, horse use and machine use in the evergreen department.

There are a number of horticulturists and nurserymen who have studied this problem of cost finding and who will advocate greater detail and a more complex system in which labor records will show each job that was performed. This is desirable to know, but in my experience I have found that the majority of nurserymen will shy from any great amount of record keeping. You can, however, analyze your business in this way without the detail and with little additional work on your part.

Knowing the total production cost for the evergreen group, we can, however, now make an estimate of the production cost or field value of any particular group of plants. I state that it will be an estimate, because it is necessary to use some arbitrary means of dividing the whole cost by some factor to get the proportionate cost that any one plant block will assume in the whole group of evergreens.

If you have all of your evergreens together in a block or blocks, the rows of which are of equal length, could you not take the number of rows in question as a portion of the total number of rows and as an equal proportion of the cost? The result will be one year's costs. By going back over all of the years that these plants have been grown and assuming the same yearly carrying charge, you can then make an estimate of the accumulated growing expenses.

Immediately, you will say that the plants do not receive the same treatment at every age of their growth. Many costs will be the same or nearly the same for the same length of rows, such as cultivating, spraying and trimming, particularly after the plants are a certain age and size when they are spaced out in wide rows two and one-half feet or more. Other costs will vary and treatments will differ. Can you estimate what the differences will be? Some of you, I don't doubt, could from experience outline the work schedule that was performed in the past and fairly accurately determine expenses run up over the first few years after lining out, the transplanting and then the maintenance up to the present year that has been shown in the account.

Job Accounts.

This leads us to a consideration of the second method of cost finding—the job account. Some experts will recommend that the job accounts be an integral part of the permanent business accounting system. Others prefer that cost accounting be kept entirely separate from the business account, to include job account studies of the units of work in production for test cases, later to be used for the purpose of ascertaining production costs and as basis for prorating the indirect expenses.

Job accounts are necessary in any case. Job accounts are the type of study that your farm management experts develop to show the cost of producing a bushel of potatoes or a quart of milk, when they have the

[Continued on page 22.]

Notes on New Plants

Distinctive Characteristics of Meritorious Woody Subjects Seen Here and Abroad—By John Van Gemert, of Morton Arboretum

In discussing new or little used meritorious woody plants at the convention of the Illinois State Nurserymen's Association, John Van Gemert, propagator at the Morton Arboretum, Lisle, Ill., presented a list of outstanding material. However, instead of describing each plant fully he merely called attention to the one or more characteristics for which each item is distinctive. Mr. Van Gement had just returned from an extensive tour of the botanic gardens of Europe and mentioned some of the fine things seen over there.

His list of noteworthy plants and terse descriptive comments follow:

Acer griseum—Paperbark maple; flaky bark like river birch; very odd; not reliably hardy; fine farther south.

Acer Negundo variegatum—Silver and golden; does not seem to sucker like Negundo.

Acer pseudoplatanus Leopoldii—Leaves when young bright rosy pink, changing to variegated yellowish pink.

Alnus glutinosa rubrinervia — Lustrous dark green leaves, red veins; small plants outstanding for an alnus.

Amelanchier lævis rosea—Young foliage purplish, flowers pink, in drooping clusters.

Betula grossa—Bark dark gray, nearly black, different from that of any other betula; large leaves.

Caragana Maximowicziana—Exceptionally fine-leaved variety; recommended because of the fine texture of the leaves; does not fruit so much as arborescens; fine for borders.

Carpinus Betulus columnaris—Splendid plant at Rochester, N. Y.; columnar; 20 to 25-foot specimens are fine.

Cercis canadensis alba—White-flowered redbud originated at Missouri Botanical Garden, St. Louis, Mo.; grows fast; has not been in flower yet at Morton Arboretum.

Chænomeles largenaria nivalis — Has white flowers, and few Japanese quinces have white flowers.

Chamæcyparis Lawsoniana — Not too hardy, but fine as seen in European botanic gardens.

Comptonia asplenifolia—Makes a low cut-leaved shrub; seen frequently along roadsides in Massachusetts; but otherwise seen little; much-cut leaves; soil at Arboretum not too good for this plant, but it seems to do all right; height of one to three feet.

Cornus Kousa chinensis—Flowers two weeks later than florida; the edible strawberry-like fruit hangs on threads about two inches long.

Cornus mas flava—Yellow-fruited cornelian cherry.

Corylus Colurna—Fine specimen at Rochester, N. Y.; mostly bushy, but makes a large forest tree in Russia; a beautifully colored plant as a small tree.

Cotoneaster obscura cornifolia—With cornus leaves; larger shiny leaves.

Cotoneaster salicifolia floccosa — Fine everywhere, but especially so at The Hague; the shining green foliage usually burns in early spring at the Arboretum the same as do the leaves of the evergreen viburnums, mahonias, etc.

Cytisus and genista—Good for planting; green wood; some types are hardy, but the flowers are yellow, and the public does not seem to want these yellow-flowered shrubs.

Daphne alpina—Small white flowers; deciduous; dwarf; fine for rock gardens or front of border plantings.

Dirca palustris — Leatherwood; rather rare; hard to get started; the pliable stems can be laid down without breaking them; can be bought in the east.

Dorycnium hirsutum—A good ground cover; white flowers in early fall; in flower at the Arboretum for the first time last year; about the same as suffruticosum.

Evonymus semiexserta—Fine velvety orange fruit; grows about same as other evonymuses, but Mr. Van Gemert likes velvety orange fruit.

Evonymus verrucosus — Very distinct branches; young growth looks as though it is covered with ants.

Fothergilla major and monticola—Have interesting white flowers that look like bottle brushes.

Ilex verticillata—The redberry, or winterberry, is pretty in seed, but it is not planted much.

Ligustrum vulgare glaucum—Dark green leaves, compact; there is also a yellow-fruited form of vulgare; compactness is maintained by trimming.

Lonicera alpigena nana—Dwarf grower; buds in winter are almost always taken for syringa.

Lonicera Maackii erubescens—Seeds late; nice leaves; Mr. Van Gemert likes it better than podocarpa; the leaves are larger and it does not grow quite so dense; seeds at same time.

Lonicera rupicola — Red-wooded branches, glossy leaves; dwarf grower.

Malus Hartwigii—Upright; only mentioned because of its upright habit.

Malus Gibbs Golden Gage—Has attractive yellow plum-size fruit.

Malus baccata pruniformis—Seedling; hexagon red cherry fruit.

Malus robusta persicifolia—Leaves like Campanula persicifolia, peach-like.

Malus sublobata—Hexagon yellow fruit.

Phellodendron amurense—Cork bark; black branches and fruit; hardy here; attractive black fruit clusters remain through winter, sometimes until March.

Philadelphus Amalthée and Atlas—Mr. Van Gemert thinks they are outstanding.

Picea Breweriana—Odd because young branches hang down; hardy.

Picea Omorika—Balkan spruce; good everywhere; perfectly hardy; now available.

Prinsepia uniflora—Prickly bush, not too fast growing; rather large reddish fruit.

Prunus fruticosa pendula—White flowers; dark red fruit; should be grafted on 4 or 5-foot stems like Catalpa Bungei.

Prunus Maackii—Bright red flaky bark, something like birch; the bark under the flakes is very shiny.

Quercus Robur fastigiata — Columnar growth; an avenue of this oak thirty to forty feet high leads from the entrance into the botanic garden at Oslo, Norway.

Robinia Pseudacacia tortuosa—Twisted branches; graft high on 5 or 6-foot stem; makes fine plant, but not attractive when it gets too big.

Salix Matsudana tortuosa — Twisted branches; does not need to be grafted high.

Salix purpurea nana—Dwarf, fine for hedge; small leaves.

Sibiræa lævigata—White flowers, plume-like and cone-shaped like those of lilacs; dark glaucous green foliage.

Sophora viciifolia—Not fast growing; bush form; good for sandy and dry soil; small leaves; seeds in pod like that of a pea only flatter.

Sorbus alnifolia—Alder-like leaves.

Sorbus discolor—White fruit, unusual for a sorbus.

Sorbus Folgneri—Distinctive for its long narrow leaves, white underneath.

Spiræa bullata—Extremely dwarf, plants 7 years old being only about a foot high, blooms all summer; flowers similar to those of bumalda; rare yet.

Symplocos paniculata—White flowers; unusual bright blue berry-like fruit.

Syringa pubescens—Fine hardy shrub, with the most fragrant flowers of any of the species.

Tilia platyphyllos asplenifolia (laciniata) —Cut-leaved linden.

Viburnum fragrans—Mr. Van Gemert saw it in bloom in every botanic garden in Europe; fine everywhere, but especially at Barres, France; hardy here, but the fact that its usual flowering time is December and January makes it doubtful if this will be good in northern Illinois.

Viburnum Lantanophyllum—A hybrid of Lantana and rhytidophyllum, with the hardiness of Lantana, which should make it a better plant for Illinois climate.

Viburnum Sargentii flavum—Has yellow fruit.

PATHFINDER STRAWBERRY.

The strawberry formerly known as New Jersey No. 35 has now been named Pathfinder. It is a new variety developed by the experiment station and released to growers recently. The variety is the result of a cross between the Howard 17 and the Aberdeen. The first cross was made in 1928 and the first fruit was produced in 1930.

Pathfinder, however, is apparently better adapted to conditions in central Jersey than south Jersey. It ripens about three days after the Howard 17 in the vicinity of New Brunswick and generally makes a good bed. The variety is not recommended on extremely dry soils or where the soil is not too fertile.

Plant Hormones in South

Response of Southern Ornamental Plants to Growth-Promoting Substances—By E. W. McElwee, Alabama Experiment Station

An experiment was started in 1937 to study the value of plant hormones for the propagation of southern ornamental plants and the concentrations and length of treatment necessary to give the best results. Twenty-three plants were treated for from three to forty-eight hours with different plant hormones. Four plant hormones—indoleacetic acid, indolebutyric acid, indolepropionic acid and phenylacetic acid—were used in concentrations of five and ten milligrams per hundred cubic centimeters of water. Sucrose or sugar at a concentration of 1.7 grams per hundred cubic centimeters of water was also used.

The accompanying table summarizes the results of two series of tests conducted in 1937. The standard treatment in these tests used five milligrams per hundred cubic centimeters of water.

For the concentrations and length of treatments used in the experiment, indolebutyric acid gave the best results in the majority of cases, both in the percentage of rooting and the extent of the root systems.

For the concentrations and length of treatments used, a comparison of the treatments giving the highest percentage of rooting and the largest root system indicates that cuttings that ordinarily root easily should be treated for six hours, those ordinarily moderately hard to root twelve hours, and those hard to root twenty-four to forty-eight hours.

Practically no advantage was shown for treating cuttings that ordinarily root easily with plant hormones except that the time of rooting was slightly decreased, and a better root system was produced in the same length of time. The treatment, however, of cuttings ordinarily hard to root with plant hormones showed a decided increase in the percentage of rooting and also gave larger root systems. Treated cuttings of five plants ordinarily hard to root showed an average increase in rooting of sixty-one per cent over untreated cuttings.

Some of the solutions of plant hormones were reused immediately for the treatment of cuttings. These cuttings showed some response to plant hormones, but in most cases the response was much less than the response from the cuttings in the first treatment. This would indicate that solutions of plant hormones left exposed deteriorate rapidly.

CHINESE ELM GROWTH.

Figures on the rapidity of growth of the Chinese elm are given by August P. Beilmann in the February bulletin of the Missouri Botanical Garden. Commenting that the Chinese elm, Ulmus pumila, has come into prominence solely because of its rapid growth, he states that certainly no other tree, hardy in this locality, can compete with it in this respect. However, rapid growth does not make for structural soundness, and this is also true of the Chinese elm.

"The tree is found growing over a considerable portion of the northern parts of Asia," he writes. "A number of distinct forms have been found, since it is an extremely variable species. Some of the earliest to arrive in this country were distinctly 'weeds'; the erratic growth habit produced branches unable to withstand wind pressure or the weight of sleet. Since the first introduction in 1906, some of the better types have been imported, and a certain amount of selection has been carried on by the nurserymen in this country. At the present time it is possible to obtain varieties with branching habits more nearly like our native trees. Thus the Chinese elm of today is less liable to storm damage, although it appears from comparison with early

Summary of Results Secured in 1937 from Growth-promoting Substances.

Scientific Name	Treatment giving best results	Length of cutting treatment in hours	Treatment to record days	Response to treatment in per cent: Check Rooted	Check Callused	Check Dead	Chemical treatment Rooted	Chemical treatment Callused	Chemical treatment Dead
Kolkwitzia amabilis	Indolebutyric	12	51	0	28	72	100	0	0
Photinia glabra	Indolebutyric	24	53	0	80	0	70	20	10
Pyracantha Gibbsii	Indolepropionic	12	53	15	0	80	75	0	25
yunnanensis	Indoleacetic	24	53	20	0	80	80	0	20
Pittosporum Tobira	Indolebutyric	24	53	10	0	0	60	10	0
Lonicera Maackii	Indolebutyric	6	53	20	40	30	70	0	30
Thuja occidentalis Douglasii pyramidalis	Indolebutyric	6	53	40	50	10	90	0	10
Photinia serrulata	Indolebutyric	48	52	0	55	40	45	5	40
Viburnum tomentosum plicatum	Indolebutyric	24	51	0	0	100	43	0	57
Viburnum dentatum	Indolebutyric	12	51	54	0	46	92	0	8
Abelia grandiflora	Phenylacetic	12	51	7	7	86	40	0	60
Ilex crenata microphylla	Indolebutyric	12	51	0	33	67	33	0	67
Ligustrum Quihoui	Indolebutyric	6	51	45	20	0	75	20	0
Ilex opaca	Indoleacetic	24	51	0	60	40	30	30	40
Viburnum Tinus	Indoleacetic	6	51	50	0	10	80	10	0
Viburnum Carlesii	Indolebutyric	12	51	0	14	86	29	0	71
Elæagnus pungens reflexa	Sugar								
	Indoleacetic								
	Indolepropionic	6	51	80	0	20	100	0	0
Berberis Sargentiana	Indolebutyric	24	51	60	0	40	80	0	20
Euphorbia pulcherrima	all	3-6	15	80	20	0	100	—	—
Pelargonium hortorum	Sucrose	24	15	80	20	0	100	—	—
Gardenia florida Veitchii	Sucrose	24	15	30	17	53	17	6	77
Ilex vomitoria	Indolebutyric	24	51	0	37	63	13	0	87
Cotoneaster Franchetii	Phenylacetic	12	53	0	80	10	10	50	10
Michelia fuscata	Indolepropionic	6	53	0	20	80	0	60	40
Average				24.8	25.2	43.6	59.0	8.7	29.2

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accounts to have lost some of its speed of growth.

"Six years ago, seventeen Chinese elms were interplanted in a row of white ash, along the service road to the Shaw avenue gate. After the elms had become established, the ash, by then nearly dead from borer attack, were removed. The following table shows the diameter of the elms at the time of planting, December 15, 1931, and after completing six years of growth, December 15, 1937.

	WEST SIDE		EAST SIDE	
Tree No.	Diameter when planted	Diameter after 6 years	Diameter when planted	Diameter after 6 years
1	1.7	4.4	2.3	7.5
2	1.6	6.7	1.2	7.0
3	2.0	9.6	1.5	8.7
4	1.3	8.7	1.4	9.0
5	2.2	8.6	1.6	8.9
6	1.9	8.2	1.1	10.4
7			2.7	11.5
8			2.1	10.3
9			2.3	8.4
10			2.3	9.0
11			2.2	10.3

"While both rows are remarkably uniform in size and general habit, a glance at the table shows that the largest tree six years ago is still the largest tree. However, the smallest tree at the time of planting is now the second in size. These two trees are neighbors in the east row which touches the nursery, and they are benefited from the cultivation and irrigation carried on there. The trees in the west row are somewhat smaller. They have received no irrigation and very little cultivation. The adjoining field is overrun with bindweed and has been the scene of many weed-control experiments. It is evident from the measurements alone that even the Chinese elm will respond to good treatment. The tree does quite well without a great deal of water; it seems to like well drained soil. It will not grow in a hole dug in impervious clay. When planted in very tight soil, some provision should be made for drainage, at least for the first year.

"The largest tree of this species in the garden measures 16.5 inches in diameter and was planted in 1918. It might be termed 'mature,' since it has reached the size when each severe storm breaks a branch from the crown. The rapid growth, however, tends to heal such openings rather quickly.

"While conceding the value of the Chinese elm for particular situations, where the growth rate as well as the probability of storm damage has been considered, it is not a tree to plant for permanence or for future generations. Rapid growth and stanchness are not properties of the same tree."

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S. C. S. TREE PLANTING.

The largest one-year program of tree planting ever undertaken by the soil conservation service of the Department of Agriculture to control soil erosion in the United States is now under way, according to H. H. Bennett, chief of the service.

According to the department's press release, approximately 150,000,000 trees and shrubs — 35,000,000 more than last year—will be set out this winter and next spring by farmers coöperating with the service in erosion-control demonstration areas, on farms surrounding some 370 C. C. C. camps working under service supervision, and by the service on publicly owned lands of the west.

ROADSIDES

THE FRONT YARD OF THE NATION

By J. M. Bennett

Superintendent of Parks and Forestry Board of County Road Commissioners, Wayne County, Mich.

Beautification of highways by the planting of trees and shrubs has been immensely stimulated by government appropriations for relief projects in recent years. Such work deserves the support of everyone interested in horticulture for its own merit and for the interest it engenders in the motoring public in such plant materials for private landscape use. Here is a book explaining what is being done and how. You should keep posted yourself and be ready to help your community in such projects.

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AMERICAN NURSERYMAN
508 S. Dearborn St., CHICAGO, ILL.

Combat Elm Disease

Control Measures to Save Elm from Dutch Disease—
By Malcolm A. McKenzie, Massachusetts State College

When a disease threatens so cherished a part of the life of the American people as their most valued shade tree, we may well consider ourselves in trouble. The so-called Dutch elm disease constitutes a dire threat to the elm and presents the most serious shade tree problem ever faced by the American people in those areas where the elm is the principal shade tree. It has been estimated that in the state of Massachusetts alone there are no less than 3,000,000 elms, which to the citizenry of the state represent one of the essential assets of the commonwealth. Recognizing the fact that these elms have an intangible value far greater than any money valuation which might be placed upon them, we have with some hesitation estimated the value of the 3,000,000 elms at $300,000,000. Additional wealth in elms throughout other New England states and New York runs into figures of alarming significance.

Aside from the money value, in a hundred ways to which we seldom give a single thought, elms contribute to the life, well-being and happiness of millions of Americans. If you have not already had occasion to appreciate the extent to which these trees affect you, take a trip to some part of the United States where shade trees and particularly where the American elms do not adorn the streets and lawns of the communities. However, if you will, you can appreciate the value of your elms without traveling beyond the limits of your own city or town. Simply walk along one of your elm-shaded streets this spring or summer and try to picture to yourself what effect the elimination of the elms would have upon your community. Without the elms you would find barrenness and desolation, instead of the charm that has become legend with the elms. Various ornamental structures of stone or iron might be installed as objects of beauty or otherwise to replace elms lost by ravages of the Dutch elm disease, but these graven substitutes are, I can assure you, at best poor seconds for the natural beauty, symmetry, life and shade of the elms. The responsibility for preserving our elms rests upon all of our citizens. With present limited knowledge, the only hope of saving healthy elms from affliction with the Dutch elm disease lies in the early recognition of any diseased trees and their prompt, through and complete eradication. No cure for the disease is known. The control of as many factors as possible which tend to limit the health of elms appears to be advisable. Spraying the trees to control attacks on the foliage by fungous and insect pests and the employment of such pruning, sanitation, watering and feeding measures as will contribute to the general health of the trees may assist in keeping elms healthy. However, these measures are not known to have any curative value for the disease, and experience seems to indicate that the "average elm" may be susceptible to the disease.

Since the European discovery of the disease by the Dutch in 1919, the malady has spread seriously in Europe on the continent. The disease is also widespread in England, but has not yet been found in Scotland. The first discovery that the disease had reached the United States, whether on imported logs or in some other way, was made when a small outbreak of the disease was found in Ohio during 1930. Three years later an area with a serious infestation was discovered in New Jersey. At present, the most serious American infestation of the disease is found on the eastern seaboard in New Jersey, New York and Connecticut. The disease is not known to occur in Massachusetts. Likewise, elms elsewhere in New England, with the exception of Connecticut, are free from the disease.

Elms affected by the disease may exhibit varying degrees of wilting and yellowing of leaves, particularly on terminal twigs. Other warnings that the Dutch elm disease may be present are to be found by examining the cut surface of a wilted branch which has been pruned from an affected tree. A brownish discoloration is distinguishable in the rings of the sapwood of wilt-affected branches, and if the bark of these branches is carefully peeled, the brownish discoloration will be observed to extend in longitudinal streaks. Laboratory study shows the discoloration to be a gummosis of the water-conducting vessels, which are thereby plugged up. Additional laboratory studies, including the planting of small sections of diseased twigs in artificial culture media under sterile conditions, will reveal whether the fungus which causes the Dutch elm disease is present. Only this laboratory test can positively determine whether the Dutch elm disease has affected the twigs concerned. No symptoms are known which will permit an accurate identification of the disease from a superficial examination of the tree in nature. Since the disease is caused by a known fungous organism—in other words a microscopic, nongreen plant—only after the presence of this organism has been proved may the tree involved be marked for destruction.

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However, control of the disease cannot be accomplished merely by eradicating trees known to be diseased in any one year. Factors which tend to spread the disease, other than the fungus itself, are constantly at work. Insects are known to serve as carriers of the fungus. The smaller European elm bark beetle and the American elm bark beetle are known to carry the spores of the disease-producing fungus within and upon their bodies. These insects breed in dead and weakened elms, where they form galleries immediately under the bark. In feeding, the beetles frequent healthy young shoots. Thus in the feeding process the beetles may carry the spores of the disease fungus from breeding galleries in diseased trees to elms which previously were disease-free. It would, therefore, appear that any sanitation measures which will tend to limit the carrier-beetle population, such as the pruning and destruction of dead branches and the removal of dead and seriously weakened elms, will be prudent supplementary safeguards against the Dutch elm disease.

The hopeful opinion that a plan similar to the one outlined may control the disease has been expressed by persons charged with the responsibility of the eradication program in the infested areas of the United States. However, the privilege of this statement entails the responsibility of constant vigilance and in actuality control is a corollary to patrol. Any encouragement in the present rather favorable outlook is justifiable only as long as constantly changing conditions are studied and recorded.

A discussion of the disease in rather complete detail has been published by the Massachusetts agricultural experiment station in an illustrated bulletin entitled, "The Dutch Elm Disease." Anyone desiring further details to supplement the information furnished in this brief account is referred to this bulletin, which will be sent free upon request. All requests for the bulletin should be addressed: Shade Tree Laboratory, Massachusetts State College, Amherst, Mass.

FRUITS FOR JUICES.

The great increase in the commercial production of fruit juices has provided a market for much off-size, off-grade and otherwise unsalable fruit, and thereby has improved the market for better fruit. Certain varieties of fruits are used to best advantage in making juice, and nurserymen may wish to learn of them. This they can do from the 64-page bulletin entitled, "Utilization of Fruit in Commercial Production of Fruit Juices," issued as circular 344 under date of November, 1937, by the California agricultural experiment station, at Berkeley. The booklet covers the subject all the way from varieties to grow to the extraction and preservation of the juices. The authors are M. A. Joslyn and G. L. Marsh, of the station staff.

EVERY step of procedure for the orchardist is described in "Apricot Growing in California," a 60-page bulletin issued by the agricultural extension service at Berkeley as circular 51, revised December, 1937, by A. H. Hendrickson.

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3 to 3½ ft.	3.00	27.50	250.00
3½ to 4 ft.	4.50	40.00	.....
4 to 4½ ft.	5.50	50.00	.....
4½ to 5 ft.	7.00	65.00	.....
5 to 6 ft.	12.00	100.00	.....
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10	Dutchman's-breeches	1.00
10	Yellow Trout Lily	1.00
10	Blue Crested Iris	1.50
10	Cardinal Flower	1.50
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10	Pink Lady's-Slipper	2.00

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Assess Nursery Stock

Considerations in Assessing Plants for Personal Property Tax Stated by Wisconsin Commissioner

As the time approaches when local assessors evaluate the land and stock of nurserymen for taxation as real estate and personal property, suggestions for the assessors' consideration may be in order.

In Wisconsin the attorney-general held several years ago that growing trees are to be assessed as improvements for taxation purposes and no exemption is granted to fruit trees on the theory that they constitute growing crops. In administering the tax laws in conformity with the opinion, the Wisconsin tax commission has given consideration to important factors, as may be noted by these excerpts from a letter written by Commissioner Charles D. Rosa to W. G. McKay, president of the McKay Nursery Co., Madison:

While nursery stock is growing in the nursery it is a part of the land and the land should be assessed with the nursery stock on it for a price which will fairly represent what the land with the stock on would sell for on the market. For instance, if an 80-acre tract with nursery stock will bring $150 an acre, while an 80-acre tract of land beside it without nursery stock will bring only $75 an acre, they are to be assessed accordingly.

If the nursery stock has been dug and placed in storage, it becomes personal property the same as oats or wheat or corn or hay or any other crop which has been severed from the land and is assessable at its market value. This does not mean the price at which it is sold in individual lots to purchasers, but what the stock would be worth to somebody taking it as a whole.

It will be seen, therefore, that nursery stock must be assessed as a part of the land upon which it is growing. The assessment must cover the value of the bare land and the value of all kinds of trees and shrubs and other nursery stock growing upon it. The price at which it should be assessed is the price that somebody would pay for the whole nursery in the condition in which it is on May 1 of the assessment season.

Undoubtedly because of modern-day methods much nursery land is depleted. This is because certain types of nursery stock, evergreen trees for instance, are now sold with a considerable ball of earth surrounding and covering its roots. The transfer of this topsoil with the plant or tree greatly depreciates the surface soil, and if any amount of such depletion has taken place the assessor should take it into consideration. He should also take into consideration whether there is on the land unsalable nursery stock. This is not an easy matter to determine. Trees that were salable a year or two ago become unsalable because of their increase in size.

The market of nursery stock also goes up and down. Sometimes trees and shrubs and other nursery articles command a high price on the market because of scarcity or booming times. At other times the market is seriously depressed due to hard times and lack of demand.

It is the duty of the assessor to weigh carefully every element which would be considered by a man who intended to purchase a nursery and be governed accordingly. It is impossible for the commission, without viewing the property and studying the situation, to place any reliable value upon the different parts of a nursery. As indicated above, it cannot be valued by any rule of thumb, but must be valued with good judgment after hard study.

A. A. N. NEWS.

When the Central Plant Board met at Columbus, O., March 2, members of the special committee on trade barriers of the American Association of Nurserymen conferred with them and with officials of the bureau of entomology and plant quarantine of the United States Department of Agriculture, from Washington, D. C., with regard to obtaining greater uniformity of state regulations as to shipment and inspection of nursery stock. Of the special committee, Chairman Lee McClain, Henry Chase and Paul Stark were in attendance. From the bureau at Washington were A. S. Hoyt, assistant chief; William Middleton, in charge of the division of Japanese beetle control; E. R. Sasscer, in charge of the division of foreign plant quarantine, and R. A. Sheals, in charge of the division of domestic plant quarantine. Clarence O. Siebenthaler, chairman of the Washington contact committee of the A. A. N., also was present.

There was every indication on the part of the state and federal officials of a keen appreciation of nurserymen's problems, and they evidenced a willingness to coöperate in every way in trying to solve them. The conferences were conducted harmoniously, and considerable good is expected from the meeting.

MESSAGE TO BUILDERS.

Since there seems in the offing a considerable amount of building, particularly of small homes, nurserymen might well seek to get a message to the prospective builders. The spring garden supplements of local newspapers, or the issues featuring home shows, are timely opportunities to convey such a message. The nurseryman who has not the facility for writing such material may find helpful the ideas set forth in the following article contributed by A. C. Hanson, president of the Hawks Nursery Co., Wauwatosa, Wis., at the request of the Milwaukee Journal, to its magazine supplement as a

Truehedge Columnberry

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Berberis Thunbergi Pluriflora Erecta

New Truehedge Columnberry — *Common Barberry*

Compare these 2-year-old plants

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A rather limited supply is available for spring 1938. There has been a complete sell out every spring before the season was over. The established prices are as follows:

	WHOLESALE			RETAIL			
	Per 10	Per 100	Per 1000	Each	Per 5	Per 25	Per 100	Per 250
9 to 12 inches	$1.50	$12.00	$105.00	$0.30	$1.25	$ 5.00	$18.00	$ 40.00
12 to 15 inches	1.80	14.50	130.00	.35	1.45	6.00	22.00	50.00
15 to 18 inches	2.25	18.50	165.00	.45	1.75	7.50	28.00	67.50
1½ to 2 feet	2.80	24.00	210.00	.60	2.25	9.75	36.00	80.00
2 to 2½ feet	3.50	30.00	270.00	.70	2.75	12.25	45.00	100.00

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"Everything That's Good and Hardy"

part of a program featuring a home show building this month, having a distribution of 250,000 copies:

May we suggest to people planning to build that, before buying a lot, some thought be given first to the type and size of house and approximate cost of same.

Present-day subdivisions contain lots wide and deep enough to carry a good-size building, with ample space to permit a proper width driveway and necessary walks. Often lots in early-day plats are too narrow to take care of side-yard zoning restrictions and still leave space enough for the desired width of house and driveway for the necessary automobile.

Another thing often overlooked, in the excitement incidental to house planning, is the failure to include in the budget a reasonable sum, that should be kept sacred, to provide for yard development in the way of grading, seeding and planting. Then, too, comes the item often entirely overlooked, of filling, which at the time seems merely incidental, but becomes an acute problem in many sections where filling material is difficult to obtain.

After the lot is acquired and before a definite commitment is made as to the style of house to build, if the owner would take the time to sit down and plan how much of a yard he will have left and what can be done with it in the way of yard trimming, many disappointments could be easily avoided. One can truthfully say that after the home is built, furnished and equipped, there is a heart-felt ambition on the part of husband and wife to have the yard coördinate on the outside with what one finds within. It is often said that the charm and maintenance of the yard generally reflect the kind of people living in that particular home. There comes a time in the valuation of every home when a depreciation or write-down in value takes place. Now what can be done to offset this depreciation? Well, there is one definite path to real appreciation and that is a carefully worked out and intelligent landscape planting. For resale purposes, whether caused by emergency or whatever the necessity for disposing of a property may be, every real estate company will tell you that the property that has been kept up and has a real "yard appeal" is the property that will move quickly at a much higher price than the home next door that is down at the heel.

Let us say, for instance, that a shade tree, an elm or a maple, of 3 to 3½-inch diameter, were to be planted in any yard this spring at a cost of possibly $10. In six or seven years such a tree should be at least ten inches in diameter or more, and its replacement price, at that attained size, moved in with a large ball of soil, would be around $110. So please note what appreciation means in a few years and what a contributing factor for resale purposes a tree or two like these, plus other desirable things, properly placed, will have in a quick turnover of a property at a fair price.

For the benefit of a new or future homeowner, may we caution folks about mistakes with respect to planting which are too often made. Speaking of Mr. Average Homeowner, the yard is usually the last thing to be given consideration, and unfortunately the unexpected many extras in building the house have left a lean purse, at least temporarily, for the all-important part, the yard trim.

Rather do less in planting the first spring or autumn, but at least do that part right according to a well thought-out plan and then follow that plan with fidelity over a space of two or three planting seasons. You will thus attain a definite objective and avoid the possibility of trying to make a few dollars produce the effect you desire, which generally means that the wrong things are planted in the wrong places. As time goes on, interest wanes, and a real possibility, be it on a large or small home property, is absolutely defeated.

Almost any kind of plant material, be it shrubbery, evergreens or what have you, can be made to look well when small sizes of different specimens are grouped together. The rude awakening comes within three to five years, when what was thought to be a balanced planting turns out to be a nondescript medley of overgrown and out-of-place plants, which in no way resembles the effect the owner was seeking.

In conclusion, wouldn't it be a wise plan, when an owner is not familiar with plants in a general way, to permit himself to be guided by and deal with some well known reliable concern and benefit by sound advice and friendly counsel?

COMMERCIAL fertilizers are used most profitably on well drained soils. Care must be taken if drainage is poor.

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HARDY FLOWERING SHRUBS, lining-out and finished stock.

SHADE AND ORNAMENTAL TREES, clean nursery-grown, in both lining-out and finished stock.

CONIFER EVERGREENS, assorted, consisting of **Biotas, Thuja, Junipers, Spruces, Hemlocks, Boxwood, Evonymus, American Holly, Kalmia Latifolia, Magnolia Grandiflora, Rhododendrons** and **Nandina.**

VINES and **CREEPERS**, very good assortment in lining-out and finished stock.

APPLE, 1-year whips, in the following list, good clean trees, good grade and true to name.

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	2 to 3 ft., 5c	3 to 4 ft., 8c	4 to 5 ft., 10c	5 to 6 ft., 12c
Delicious, Double Red	625	2200	...	...
Delicious, Red	1200	3675	2220	125
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Hackworth	100	200	75	...
Janet	...	200	50	...
Jonathan	...	...	500	...
Kinnard Choice	200	400	135	...
Malden Blush	...	75	140	...
Mammoth Black Twig	100	275	100	...
Red Astrachan	300	100	...	...
Red June	350	340	...	...
Smoky Mountain	100	125	...	...
Stayman Winesap	1125	2800	840	50
Summer Queen	300	160	300	60
Transparent	...	380	530	45
Winesap, Red	250	110	550	...
Winter Banana	175	400	365	25
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BERBERIS THUNBERGII, Japanese Barberry

	Per 100	Per 1000	Per 10,000
3 to 6-in. seedlings	$0.70	$ 6.00	$40.00
6 to 9-in. seedlings	.80	7.00	60.00
9 to 12-in. seedlings	1.25	10.00	80.00
12 to 15-in. seedlings	2.00	18.00	.....

LIGUSTRUM AMURENSE, Amoor Privet North

Lining-out grade, 6 to 15 ins.	$1.00	$ 8.00	$ 70.00
6 to 12 ins., C., 2 branches and up	1.25	10.00	90.00
12 to 18 ins., C., 2 branches	2.00	18.00	170.00
12 to 18 ins., 3 branches and up	3.00	25.00	240.00
18 to 24 ins., 2 branches	3.00	25.00	240.00
18 to 24 ins., 3 branches and up	3.50	30.00	290.00
2 to 3 ft., 3 branches and up	5.50	45.00	.....

LIGUSTRUM IBOLIUM, Ibolium Privet

6 to 12 ins., C., 2 branches and up	$1.50	$10.00	.....
12 to 18 ins., 3 branches and up	3.00	25.00	.....
18 to 24 ins., 3 branches and up	3.50	30.00	.....
2 to 3 ft., 3 branches and up	5.50	45.00	.....

LIGUSTRUM OBTUSIFOLIUM, Ibota Privet

6 to 12-in. seedlings	$1.25	$10.00	.....
12 to 18-in. seedlings	1.50	12.00	.....
18 to 24-in. seedlings	2.00	15.00	.....
6 to 12 ins., C., 2 branches and up	1.25	10.00	.....
12 to 18 ins., C., 3 branches and up	3.00	25.00	.....
18 to 24 ins., C., 3 branches and up	3.50	30.00	.....

LIGUSTRUM OVALIFOLIUM, California Privet

Lining-out grade, 6 to 15 ins.	$0.50	$ 4.00	$ 35.00
6 to 12 ins., 1-yr., 2 branches and up	.60	5.00	45.00
18 to 24 ins., 2-yr., 3 branches and up	2.00	15.00	125.00
2 to 3 ft., 2-yr., 4 branches and up	2.50	20.00	175.00
3 to 4 ft., 2-yr., 4 branches and up	3.00	25.00	.....
4 to 5 ft., 2-yr., 5 branches and up	4.00	35.00	.....

LIGUSTRUM SINENSE, South Privet

12 to 18-in. seedlings	$0.60	$ 5.00	$40.00
18 to 24-in. seedlings	.80	7.00	60.00
2 to 3-ft. seedlings	1.25	10.00	80.00
12 to 18-in. branched seedlings	1.25	10.00	80.00
18 to 24-in. branched seedlings	1.50	12.00	.....
2 to 3-ft. branched seedlings	2.00	15.00	.....
12 to 18 ins., transplanted	1.50	12.00	.....
18 to 24 ins., transplanted	2.00	17.50	.....
2 to 3 ft., transplanted	2.50	20.00	.....

Samples sent upon request.
Satisfaction guaranteed on all stock purchased from us.
Send want list for special quotations.
Write for a copy of our new Spring Trade List.

FOREST NURSERY COMPANY, INC. McMinnville Tenn.

Established 1887
By J. H. H. Boyd

J. R. Boyd
President

School at Painesville

Talks at Northeastern Ohio Nurserymen's School Bring Further Practical Information to Trade

The northeastern Ohio nurserymen's school, sponsored by the Lake County Nurserymen's Association, agricultural extension service and the department of horticulture, Ohio State University, was, as usual, highly successful, with a registration of over 100, Februray 22 and 23, at Painesville.

The meeting was called to order by F. G. Haskins, Lake county agricultural extension agent, who, after a few words of welcome, introduced the first speaker, Prof. L. C. Chadwick, of Ohio State University, who gave an interesting discussion on "The Effect of Synthetic Growth-promoting Substances on the Rooting of Cuttings of Woody Plants." The talk followed rather closely that given by the speaker at several other nursery meetings during the present season, previously reported in the American Nurseryman.

Some recent evidence was presented regarding the statement that treated cuttings produce more roots than nontreated cuttings. This will probably hold true with many types of succulent cuttings, but some recent work with Taxus cuspidata at Ohio State University shows that the total root length may be similar in both treated and nontreated cuttings. These tests would seem to indicate that the average total length of roots per cuttings in sand on nontreated cuttings is as great as or greater than on treated cuttings. Root growth of taxus cuttings in a medium of equal parts of sand and peat is considerably less than that occurring on cuttings in sand. This fact was reported by the speaker a number of years ago. Treatment with indolebutyric acid seems to increase root production, however, to the extent of approximating that occurring in sand.

Dwarfing Apple Stocks.

The second speaker of the morning session was Dr. H. B. Tukey, chief in research, division of pomology, New York experiment station, Geneva, N. Y., who gave an interesting talk on "Should I Grow Dwarf Fruit Trees?" He emphasized the fact that more attention should be given to the "build-up" of a fruit plant. Study carefully the influence of the root, the intermediate stem piece or trunk and the top on the development of the tree as a whole. All of these parts can influence the final nature of the tree and nurserymen will do well to "build" their trees to fit a definite purpose. Dr. Tukey discussed at some length the Malling rootstocks. These were classified into four groups: (1) Very dwarfing, (2) semidwarfing, (3) vigorous and (4) very vigorous. In group 1 there are two types, Malling Nos. 8 and 9. No. 9, Jaune de Metz, is better than No. 8, the French Paradise. In group 2 there are three types, Malling Nos. 2, 3 and 5. No. 2, the Doucin or English Paradise, is probably the most satisfactory. Groups 1 and 2 will probably take little part in commercial apple production. They may, however, be useful as stocks for trees suitable for espalier work and as dwarfs for small yard and ornamental planting.

In group 3 there are six types, Malling Nos. 1, 4, 6, 7, 10 and 11. In this group Malling 1, a broad-leaf English Paradise, is liked. No. 7, which may later be shifted to the semi-dwarfing class, is also satisfactory. In group 4 there are five types, Malling 12, 13, 14, 15 and 16. Malling 12 and 13 are possibly the most satisfactory for commercial fruit production. While these two types are very vigorous in England, they are somewhat dwarfing here. Malling stocks Nos. 1 and 9 root readily from layers, while No. 12 is somewhat hardier to root.

Selecting Proper Plants.

The afternoon session was opened with an illustrated lecture by Harold C. Esper, general campus foreman, Ohio State University, on "The Use and Abuse of Plant Materials." Natural color slides were shown of plantings of many of the evergreens and some deciduous shrubs. Proper selection of plants for city conditions was emphasized. Relatively few of the narrow-leaf evergreens really do well in congested city districts. Taxus, as a group, does well, as do some of the junipers. Few if any of the chamæcyparis and thujas are really satisfactory. Large-growing evergreens, such as the pines and spruces, should be avoided in foundation plantings. Overplanting and the use of too many

TAXUS CUSPIDATA CAPITATA
(Upright Japanese Yew)
Compact heavy specimens, 5 ft. to 8 ft. high, growing 6 feet apart in rows.
Roots very fibrous and dug with perfect balls.
Quotations on any quantity.
PEEKSKILL NURSERY
Croton Ave. Peekskill, N. Y.

TAXUS
Cuspidata Capitata
1½ to 9 feet.
Carloads or truckloads only.
VISSER'S NURSERIES
Springfield Gardens, L. I., N. Y.

Fine assortment of Fruit Trees, Shrubs, Evergreens—priced low.
Write for our wholesale circular. Big savings possible.
MALONEY BROS. NURSERY CO.
Dansville, New York

WRITE US FOR QUOTATIONS ON
BERBERIS THUNBERGII
1-year seedlings, 3 to 6 ins. and 9 to 12 ins.
ROSA MULTIFLORA JAPONICA SEEDLINGS
2 to 4 mm., 4 to 6 mm., 6 to 8 mm.
Send for our complete price list.
C. L. VANDERBROOK & SON
MANCHESTER, CONN.

THE WESTMINSTER NURSERIES
WESTMINSTER, MARYLAND
Fruit and Shade Trees, Evergreens, Shrubbery, all sizes up to 7 ft. California Privet, 3 to 7 ft., in grades. Heather, assorted, 8 to 18-in. clumps. Evergreen Privet and Barberry. Perennials, etc.
We have a very complete line. Trade list sent on request.

Pink Flowering Dogwood, from liners to 12 to 14-ft. specimens.
Lilacs, species and hybrids.
Crabs and **Flowering Cherries.**
Azaleas, in many varieties for lining out.
Taxus Ovata (rare yew).
Send for our list to trade.
Kingsville Nurseries, Inc.
H. J. Hohman, Kingsville, Md.

SHADE TREES

	Per 10	Per 100
Ash, Am. White, 10 to 12 ft.	$7.50	$65.00
Ash, Am. White, 2 to 2½-in. cal.	15.00	125.00
Catalpa Bungei, 5 to 6 ft.	7.50	65.00
Elm, American, 10 to 12 ft.	7.50	65.00
Elm, American, 1½ to 2-in. cal.	9.00	80.00
Elm, American, 2 to 2½-in. cal.	12.50	115.00
Flowering Crab, 3 to 4 ft. (Eleyi, Floribunda, Hopa, Sargentii)	4.00	....
Japanese Cherry, 3 to 4 ft.	7.50	65.00
Japanese Cherry, 4 to 5 ft.	8.50	75.00
Jap. Weeping Cherry, 1-yr., 5 to 6 ft.	13.50	125.00
Maple, Norway, 8 to 10 ft.	9.50	85.00
Maple, Norway, 10 to 12 ft.	11.00	100.00
Maple, Norway, 2 to 2½-in. cal.	20.00	185.00
Oak Pin, 2 to 2½-in. cal.	25.00	....
Oak Pin, 2½ to 3-in. cal.	40.00	....
Plane, Oriental, 2½ to 3-in. cal.	20.00	....
Poplar, Lombardy, 6 to 8 ft.	2.50	20.00
Poplar, Lombardy, 8 to 10 ft.	3.00	25.00
Poplar, Lombardy, 10 to 12 ft.	4.00	35.00

Write for prices on other varieties and sizes.

WAYNESBORO NURSERIES, INC.
Waynesboro, Virginia

LARGE SPECIMEN
EVERGREEN TREES AND SHRUBS
DECIDUOUS TREES AND SHRUBS
for immediate effect
Towson Nurseries, Inc.
TOWSON, MARYLAND
near Baltimore
Send for special list

LINING-OUT STOCK

Complete list of deciduous lining-out stock this year.

Place your order now for Spring shipment, and avoid disappointment when wanted.

THOMAS B. MEEHAN CO.
Dresher, Pa.

PRIVET and BERBERIS
Splendid Stock
Write for Special Quotations
LESTER C. LOVETT
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Ampelopsis Veitchii Forcing Roses
Barberry Thunbergii
And Complete Line of Nursery Stock
C. R. BURR & COMPANY, Inc.
Dept. A—Manchester, Conn.

Canterbury Boxwood
Buxus suffruticosa and B. sempervirens.
Selected uniform plants; bushy and foliaged to center; masses of fibrous roots. Finished specimens from 4 inches up, ready for quick shipment. Prices lower, plants larger. Ask for special list.
CANTERBURY, Box A, Easton, Md.

off-colored foliage types are common faults.

Budding List Up-to-Date.

This discussion was followed with a talk by Dr. Tukey on "Bringing the Budding List Up-to-Date." Dr. Tukey emphasized the fact that varieties should be appraised on the basis of the following classification: (1) Standard commercial varieties of the region; (2) well known varieties, but of secondary importance; (3) well known varieties, but which will succeed better elsewhere; (4) well known varieties not adapted to the region, and (5) varieties recently introduced. On the basis of this classification the following varieties were recommended:

Apples: Yellow Transparent, Lodi, Melba, Wealthy, Lobo, McIntosh, Cortland, Kendall, Macoun, Sweet Delicious, Rhode Island Greening, Baldwin, Rome Beauty, Jonathan, Northern Spy and Golden Delicious.

Pears: Bartlett, Seckel, Cayuga, Sheldon, Beurre Bosc and Kieffer.

Peaches: Mikado, Marigold, Sunbeam, Golden Jubilee, Pioneer, Delicious, South Haven, Halehaven, Valiant, Viceroy, Veteran, J. H. Hale and Elberta.

Plums: Beauty, Formosa, Santa Rosa, Pacific, Stanley, Italian Prune, Reine Claude and Albion.

Cherries: Seneca, Governor Wood, Lyons, Black Tartarian, Ida, Schmidt, Reine Hortense, Montmorency and Windsor.

Prof. L. C. Chadwick discussed briefly "Preliminary Results of Minor Elements and Acidity on the Production of Rose Blooms." Based on the combined results of five varieties for one year, the data recorded show, based on blooms per plant, the plots to range, best to poorest, as follows: Zinc, pH 5.0, manganese, pH 7.0, magnesium, peat, pH 6.0, pH 8.0 and check. The number of blooms ranged from 32.2 per plant in the zinc plot to 24.4 in the check plot.

The annual dinner-dance is fast becoming an outstanding feature of this meeting. Approximately 150 people attended the function this year and it was thoroughly enjoyed by all.

Root Stimulation.

Wednesday morning's session opened with a discussion by Harold C. Esper on "Recent Scientific Advances in Ornamental Horticulture of Interest to Nurserymen and Landscape Gar-

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We offer the following varieties for spring delivery from 2¼-in. pots, grafted on Juniperus virginiana understock.

J. chinensis columnaris glauca
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J. chinensis neaboriensis
J. chinensis Sargentii
J. chinensis Sargentii glauca
J. squamata
J. squamata argentea
J. squamata Meyeri
J. japonica aureo-variegata
J. virginiana Burkii
J. virginiana Canaertii
J. virginiana elegantissima
J. virginiana glauca
J. virginiana globosa
J. virginiana Keteleeri
J. virginiana Kosteri
J. virginiana Schottii
J. virginiana pendula
J. virginiana pyramidiformis

Price $25.00 per 100

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LINING-OUT STOCK
Connecticut Valley Grown
Seedlings - Rooted Cuttings
Evergreen and Deciduous
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Hardy Ornamentals

QUALITY NURSERIES
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Largest Nursery in Central Pennsylvania
Special Prices
on
Hemlock—Yew—Arbor-vitæ

GENERAL NURSERY STOCK
Specimen and Lining-out
FAIRVIEW EVERGREEN NURSERIES
Fairview, Erie Co., Pa.

deners." Most of the information presented concerned studies conducted during the past few years at Ohio State University. The information presented regarding (1) the fertilization of shade trees in the nursery, (2) chlorosis studies and (3) root distribution of elms was published in the American Nurseryman for February 1 and March 1, 1938.

During the winter of 1936-37 studies were undertaken to determine the feasibility of using some of the growth-promoting substances as aids in stimulating new root growth on the roots of ornamental shrubs as an aid in transplanting.

Three-year-old field-grown seedlings of Viburnum dilatatum and Cotoneaster divaricata were removed from the field February 6 and 16 respectively, washed, root pruned severely and potted in 5-inch pots in loam soil of an acid reaction (pH 6.0), high in nitrate nitrogen and potash, but relatively low in phosphorus. After the plants were treated with the growth-promoting substances, they were placed in a cool greenhouse.

The growth substances used in these tests were indoleacetic, indolebutyric and phenylacetic acids. Applications were made by (1) soaking the roots in solutions of 2 mg., 5 mg. (cotoneaster only) and 10 mg. per 100 cc. for eighteen hours, (2) by applying 100 cc. of solution containing 10 mg. and 20 mg. of the acids to the soil after potting and (3) by coating the roots of the plant with emulsified paraffin containing the growth substances. This last method of treatment was used only with Viburnum dilatatum and, in general, such treatments were unsatisfactory.

With Viburnum dilatatum soaking the roots eighteen hours in 2 mg. per 100 cc. of indolebutyric acid gave the best results. Masses of new roots appeared near the end of the old roots where they were cut. Of the soil treatments the application of 20 mg. per 100 cc. of indoleacetic proved the most satisfactory.

The results with Cotoneaster divaricata were similar. Soaking the roots in indolebutyric acid, 5 mg. per 100 cc., for eighteen hours proved the most satisfactory.

These preliminary experiments showed that considerable root stimulation could be expected by soaking the roots of the deciduous shrubs used in some of the growth substances. Applications to the soil after potting may be useful under some conditions.

Seed Germination.

Many of the so-called 2-year seeds will germinate the first season if a storage period at a temperature of about 60 to 65 degrees Fahrenheit can be followed by one at 40 degrees. The length of the period required at these different temperatures varies with different kinds of seeds, but for many two months at 60 to 65 degrees followed by three to four months at 40 degrees will bring about the desired results. Seeds can be stratified in flats and placed at the warm temperature in a greenhouse, later being transferred to the cold cellar for the cold period treatment. Some of the seeds that have responded at Ohio State University when handled in this way are: Aronia arbutifolia, Cornus alternifolia, Cornus Kousa, Cotoneaster hupehensis, multiflora calocarpa, Parneyi, Simonsii, variegata and Zabeli; Evonymus sachalinensis, Hamamelis vernalis, Viburnum dilatatum and odoratissimum. The Boyce Thompson Institute has reported others that will respond to this treatment. Those tried at Ohio State that did not respond are: Cotoneaster acutifolia, divaricata, foveolata, Franchetii, horizontalis Wilsonii, lucida and racemiflora songanica; Evonymus atropurpureus, Ilex pedunculosa, Styrax japonica, Symplocos paniculata, Viburnum furcatum and Wrightii. It is possible that a modification in the length of the warm and cold storage periods will cause germination of some of these seeds the first year.

Some work was recently reported by M. E. Gelley, of the federal forest service, regarding the germination of seed of eastern red cedar. Of the several methods of treating seeds, (1) freezing in a block of ice for twenty-one days, (2) in moist peat moss at 41 degrees for sixty-six days, (3) treatment with dilute hydrochloric acid and pepsin prior to stratification and (4) scarification, only the first was effective, giving 56.2 per cent germination after forty-five days.

Howard Chard, sales manager of the Storrs & Harrison Co., Painesville, O., discussed briefly, but clearly, "The Social Security Act as It Affects the Nursery Industry."

F. G. Haskins gave a brief review of the relationship between the extension service and the nurseryman. The policies as well as the ways in which the extension service may aid the nurserymen with their problems were mentioned.

Trends in Ornamentals.

The afternoon session opened with a talk by Prof. L. C. Chadwick on "What Are the Trends in Demand for Ornamental Nursery Stock?" Forecasting trends in demand for nursery stock is usually tempered with

10,000 Lombardy Poplar
6 to 8 ft. and 8 to 10 ft.

10,000 Black Locust
3 to 4 ft., 4 to 6 ft. and 6 to 8 ft.

1000 Morrow Honeysuckle
2 to 3 ft. and 3 to 4 ft.

Also general line of Shrubs and Bulbs

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NAGLE'S NURSERY
Benton Harbor, Mich.

SAVIN JUNIPER

	6000 B&B		
15 to 18 ins.	$0.50	18 to 24 ins.	$0.65
24 to 30 ins.	.85	30 to 36 ins.	1.00

HORIZONTALIS JUNIPER

18 to 24 ins.	$0.60	24 to 30 ins.	$0.75

HIBERNICA JUNIPER

18 to 24 ins.	$0.40	24 to 30 ins.	$0.50
30 to 36 ins.	.60	3 to 4 ft.	1.00

Elm, American, 1¼ to 2-in. cal.
Betula Populifolia, 1½ to 3-in. cal.
Prices on application.
All stock first-class nursery-grown.

THE HIGHLAND NURSERIES
Johnstown, N. Y.

EVERGREEN SEEDS

	Price per Oz.	Lb.
Juniperus scopulorum, Silver Cedar	$0.25	$1.50
Picea pungens glauca, Blue Spruce		
Standard Grade	.50	3.50
First Grade	1.00	8.50
Pinus edulis, Pinon	.25	1.00
Pinus ponderosa, Yellow Pine	.25	2.50

Discount on quantity orders.

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Upton Gardens
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FLOWERING CRABS

We have a very fine lot of Flowering Crabs, nice bushy trees. All budded or grafted, 6 to 8 varieties. 1 to 1¼-in. caliper, some 2-in. 5 to 8 ft. tall, some 10 ft. Good root system.

Wish to interest quantity buyers who will send truck for load. Prefer to sell bare roots. Priced to sell.

GHENT RIDGE NURSERY
35 Marvin Ave. Akron, O.

TAXUS

Taxus Cuspidata, propagated from cuttings of the improved dark green strain.

XXX B&B—18 to 24 ins..... $1.50
2 to 2½ ft..... 2.00
2½ to 3 ft..... 3.00

For larger plants, ask for prices.

TAXUS BACCATA AUREA

15 to 18 ins. $1.00
18 to 24 ins. 1.50

JUNIPERUS DEPRESSA PLUMOSA

18 to 24 ins. $1.00
2 to 2½ ft. 1.50

Best low-growing Juniper.

Above prices in lots of 100. F.o.b. Cincinnati.

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CARAGANA ARBORESCENS

2-year seedlings	100	1000	5000
6 to 9 ins.	$1.00	$ 6.50	$23.00
9 to 12 ins.	1.25	9.00	35.00
12 to 18 ins.	1.60	12.50	.....
18 to 24 ins.	2.20	17.50	80.00
2 to 3 ft.	3.00	25.00	96.00
3 to 4 ft.	5.00	44.00	.....

Strong, well rooted stock; larger sizes mostly well branched, lots of them suitable for resale at retail.

20 Per Cent Discount

Money talks—yours is worth 20 per cent this month. For cash with order discount above prices 20 per cent.

We have 3000 **Russian Olive,** nice straight 12 to 18-in. seedlings, priced $2.20 per 100, $17.50 per 1000, $50.00 for the lot, net.

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EVERGREEN SPECIALISTS
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All types, including Tree Peonies

The Cottage Gardens
Lansing, Mich.

the fact that the speaker would like to see certain changes take place. This talk was given with this thought in mind. Trends in production will follow more closely the demands of the client. Plants will be produced because they have a definite use in landscape composition and will be demanded by the client. Clients will demand a more complete year-around effect. Stop selling plants only because they have good flowers. Stress habit of growth, foliage and adaptability to a definite situation. This year-around effect can be obtained with deciduous shrubs as well as evergreens.

Clients in the future will want planting done at all times of the year. Nurserymen and landscape gardeners should be ready to do this, but at a cost sufficient to cover the extra care required in handling. If we do not have plants that can be moved at odd seasons, it is up to the nurserymen to produce some that can be handled in this way. Prices should be charged according to quality of material, nature of the situation and the use to which it is to be put. Stop selling bushes, and sell effect and quality. Future markets will call for more plants effective in the autumn. Hardy chrysanthemums can replace fading annuals, fruiting plants will be moved with berries in the autumn, and there will be an increase for autumn-flowering shrubs and small trees. Retail sales will be based more on combinations and group plantings. Sell the entire effect. Make one plant sell another. The speaker forecast an increase in demand in the future for suitable hedge material, satisfactory vines, narrow upright trees, bank covers and spreading shrubs, and good shrubs and evergreens with year-around effect. There will be little change in demand for standard trees and annuals and perennials. A decrease in demand was forecast for common shrubs and evergreens without distinctive habit, and for roses unless a new strain is developed that is superior to the majority of the roses of today. Roses must have better foliage, better habit of growth, be more hardy, be more resistant to insects and diseases and have a better year-around effect. Rose hybridizers can well afford to pay more attention to some of these characteristics and less to flower type and color.

There will be a good future for

LINING-OUT EVERGREENS

JUNIPERS

		Ea. 100	Ea. 1000
300	**Andorra,** 6 to 8 ins., TT.	$0.14½	$0.12½
600	**Andorra,** 8 to 10 ins., TT.	.18	.16
600	**Andorra,** 10 to 12 ins., TTT.	.23	.21
400	**Pfitzeriana,** 6 to 8 ins., TT.	.16	.14
700	**Pfitzeriana,** 8 to 10 ins., TT.	.19½	.17½
300	**Canadensis,** 6 to 8 ins., TT.	.14	.12
175	**Sabina,** 6 to 8 ins., TT.	.14	..
450	**Tamariscifolia,** 6 to 8 ins., TT.	.15	.13
250	**Hibernica,** 6 to 8 ins., TT.	.14	.12
400	**Waukegan,** 6 to 8 ins., TT.	.14	.12
400	**Waukegan,** 8 to 10 ins., TT.	.17	.15
200	**Horizontalis,** 6 to 8 ins., TT.	.13½	..
250	**Horizontalis Alpina,** 8 to 10 ins., TT.	.16	.14
700	**Blue Creeping,** 6 to 8 ins., TT.	.15	.13

BUXUS

800	**Sempervirens,** 6 to 8 ins., TT.	.10	.08
600	**Suffruticosa,** 6 to 8 ins., TT.	.11	.09

25 at 100 rate, 250 at 1000 rate.

Independence Nurseries, Inc.
Independence, O.

NURSERY STOCK

Mazzard Cherry Seedlings
No. 1 3/16-in.
$14.00 per 1000

Multiflora Japonica Cuttings
5 to 9 mm. No. 1
$13.50 per 1000

Write for our complete list of lining-out stock.

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Hardy Minnesota-grown Nursery Stock and Liners

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POUCH N
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LINING-OUT STOCK B & B EVERGREENS

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South's Largest Florists and Nurserymen

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Write for our
New Wholesale List

EDEN NURSERIES
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LINERS:
Including **Ligustrum, Scotch Broom, Mimosa**

SPECIMENS:
Ilex crenata, Pin Oak, Sugar Maple. Peach, Apple, Plum.

Send for our surplus list.

HOWARD-HICKORY CO.
Hickory, N. C.

plant breeders in ornamental horticulture. Practically nothing has been done in the way of developing woody ornamental plants to fit a definite need. Nurserymen have taken what has come in the way of sports and hybrids and let it go at that.

Future demands for nursery stock can be aided by true descriptions of characteristics of the plants in nursery catalogues. State the poor, unsatisfactory points as well as the good ones. This will definitely lead to more satisfied customers. If you know a plant is poor, suggest a better.

Professor Chadwick stressed the fact that fewer plant varieties are needed if good types are developed. Altogether too many varieties of plants are carried in the nursery catalogues at the present time. Of the 200 species and varieties of junipers, fifteen to twenty-five are all that are really satisfactory and needed for Ohio and adjoining states. Producers and dealers in woody ornamental plants have been prone to add all new plants, without discarding any of the inferior ones. The turnover in fruit varieties is much better, for as new varieties find their way into the trade, inferior ones are discarded. As an example of this, a nursery catalogue issued in 1923 listed thirty-one kinds of apples. Only seven of these varieties are listed by one of the leading fruit tree producing nurseries in 1938. On the other hand, all the seventy types of shrubs listed in 1923 were still listed in the 1938 catalogue and many more. Sixty-five varieties of roses were listed in 1923, and all but fifteen of these were listed in 1938. This elimination of inferior varieties is one of the most important problems facing the nurserymen at the present time.

Paul Denten, secretary of the Chardon maple sugar festival, Chardon, O., discussed briefly the topic, "Behind the Scenes of the Chardon Maple Festival." Mr. Denten gave the nurserymen considerable information that they can follow in sponsoring a flower festival in Painesville. Such a festival is planned for next autumn.

Merchandising.

"Magnifying Markets" was the topic discussed by C. H. Henderson, director of the trade expansion program, Cleveland Chamber of Commerce, Cleveland, O. Mr. Henderson stressed the need of urging consumption of local products. By proper merchandising and advertising, nurserymen can greatly increase their local markets. The modern client does not buy what you sell him. To illustrate this, Mr. Henderson mentioned the case of Listerine. People don't buy Listerine; they buy something to overcome unpleasant breath. Five ways were stressed to increase business: (1) Reach more territory, (2) add more lines, (3) better merchandising, (4) more outlets within a given territory and (5) coöperation.

The school closed with an interesting discussion of merchandising by Melvin E. Wyant, rose specialist, Mentor, O. Mr. Wyant emphasized coöperation among nurserymen, support of local, state and national organizations, and the good will and prestige that can be built up through satisfied customers, the recipients of quality nursery stock and friendly service.

COST ACCOUNTING.

[Continued from page 10.]

coöperating farmers keep a running record of every hour of work on every job going into production.

A nurseryman can, to his advantage, keep a running record of work and materials used in a test block of any type of plant—take for example a block of rooted shrub cuttings lined out next spring. Carry that record for as many seasons as it seems necessary to find the growing costs of salable plants or until you are sure that the yearly maintenance costs of the block will be the same each year. If after two full seasons of growth the block is completely dug for sale and for transplanting those plants not sold, place an inventory value (the accumulated per plant cost value) on those to be transplanted and carried on, subtract this value from the expense account and find out to the single dollar if you have made a profit on shrubs and at what price you could sell those shrubs to break even. To go back to the unsold plants, start a new account for them if you wish—put in the inventory value, record the cost of transplanting and carry on.

Production Cost and Selling Price.

Sooner or later in a discussion of this kind we are led into the dangerous waters—that sea that you enter when you talk of selling price. You can't keep away from it; so let us attempt to clarify the relationship between field costs and selling price.

Assume that you have found the growing cost of a block of plants or a single plant species. You all know that success in any manufacturing business depends on turning over or selling that which you produce. If you sell only half of what you produce, you have to get twice as much for the articles sold as if you had sold 100 per cent—that is, provided selling and handling costs are the same in each instance. This is an inverse proportion of the per cent of turnover.

For example, our estimate of production cost for some particular type of material, including an overhead charge prorated on the labor expended, is 60 cents. We have sold or anticipated to sell at least sixty per cent of the material in this block. I might add that if sales exceed the sixty per cent quota it is naturally to the advantage of the nurserymen, but some safe percentage figure must be struck.

Using a simple mathematical formula that can be illustrated on a graph,

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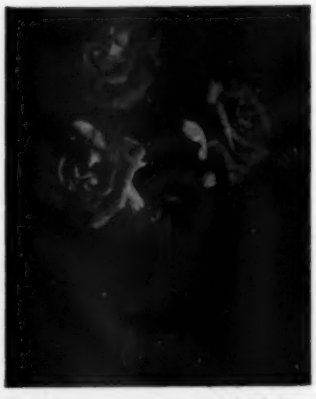

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6 to 12 ins. ..... $10.00 per 1000
12 to 18 ins. ..... 15.00 per 1000
18 to 24 ins. ..... 20.00 per 1000
24 to 30 ins. ..... 25.00 per 1000
36 to 48 ins. ..... 50.00 per 1000
500 at 1000 rate
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ULMUS PUMILA (Northern Strain)
Hardy Northern Type—Mature stock, power dug. Immediate or later shipment.
Write for prices.
TOLLESON NURSERIES Denver, Colo.

the field price to cover 60-cent cost with sixty per cent sales works out to $1 each. This is not a selling price. On top of the $1 value we must add something to take care of sales expenses, labor of digging, delivery and at least a ten per cent profit. Most of you know what your ratio of sales expenses to the total gross yearly sales has been. Deliveries likewise can be applied as a percentage based on your book records. Digging expenses can be estimated from past experience in taking this type of material. Lumping all of these together as one percentage figure of the gross sales we can develop another simple formula that will give us the theoretical minimum selling price for the plants in question. Assuming that this percentage cost of selling price is fifty per cent, the $1 plant item in the field must bring at least $2.

There is one other thought that I want to express. Different plants have different growth rates. Two or more plants, however, will receive the same cultural treatment. At the end of five years one plant will have attained a height of three feet, as Juniperus hibernica, while Juniperus virginiana glauca will be three and one-half to four feet, Juniperus Cannartii may be four to four and one-half feet, while Juniperus chinensis columnaris might be four and one-half to five feet. Costs have accumulated equally over the same number of years, and therefore, theoretically each plant in its own size should be worth the same and could sell at the same price. There are a number of reasons why they don't sell at identical prices, but I do believe that this should be given greater consideration.

I hope that I do not give the impression that it takes a highly trained technician and a highly complicated accounting system to know costs of production. Any nurseryman can take a sheet of paper or a notebook and keep a time and material record for a test block. Any of you could, if you wished to go to a little extra trouble, keep a business record that would divide the expenses into departments of the work. If you would sit down and go over your present accounts, to find out what information you lack, I am sure that the solution would easily present itself and that you may find it profitable to know more about what you are doing.

Azalea mollis
(Chinese Azalea)
Ceanothus prostratus
(Mahala Mat)
Thuja orientalis aurea nana
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And many others, both old and new, in our complete line of **Evergreens**
BROAD-LEAVED AND CONIFEROUS
Lining-out and Balled Stock
Rooted Cuttings
Write for Wholesale Trade List Giving Descriptions and Prices
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Our usual line of quality nursery stock, including Shade and Flowering Ornamental Trees and Specialties, Fruit Tree Seedlings and Roses.
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"Pioneer Nursery of the Northwest"
Fruit, Shade, Flowering and Ornamental Trees, Fruit Tree and Chinese Elm Seedlings. Car lot advantages to all points east.
Send for our Trade List.

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Wholesale Growers
Fruit, Shade, Flowering Ornamental Trees, Fruit-tree Seedlings, Roses, Etc.
Very complete line of quality stock
Catalogue sent on request.

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Largest Fruit Tree Seedling Growers In America.
We accept growing contracts for 3 to 5 years. Quality stock. References on request.
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New Bulletins

ON FARM TREE PLANTING.

For better land use and for soil-erosion control, trees should be planted on more than 3,000,000 acres of land on Illinois farms which cannot profitably be used for annual farm crops at the present time, states J. E. Davis, extension forester, in circular 477, entitled "Forest Planting on Illinois Farms," issued by the Illinois agricultural experiment station. This 40-page illustrated pamphlet gives advice as to planting the plantation, suitable trees, planting and care.

From the same institution comes another 40-page pamphlet, circular 482, entitled "Growing Fruit for Home Use" by Victor W. Kelley, giving help on planting the fruit garden, soil management, pruning and spraying.

To support its admonition that well tended forests should occupy every acre of poorer soil where agriculture crops are not profitable, Cornell extension bulletin 226, "Forest Planting on the Farm," originally issued February, 1932, has been reprinted. In its forty-four pages, the authors, S. N. Spring and C. H. Guise, give detailed instructions for the planting and care of trees on the farm.

From the extension service of the college of agriculture of the University of Wisconsin comes an 8-page pamphlet, circular 287, under date of January, 1938, on "Shelterbelts for Windblown Soils," in which F. B. Trenk gives concise instructions for planting and care.

ORCHARD SOIL NEEDS.

In response to criticism of the so-called "nitrogen only" program of orchard fertilization as no longer adequate, R. C. Collison, chief in research for pomology, has written bulletin 679, dated September, 1937, and just issued by the New York state agricultural experiment station, Geneva, bearing the title, "Potash and Phosphorus in relation to Organic Matter in New York Orchards." Briefly reviewing the soil response in New York orchards and experiments of the past, the author of this 18-page bulletin concludes that the use of potash and phosphorus is at present unnecessary in orchards on the better fruit soils of New York, in orchards where farm manure or hauled-in mulch materials are used liberally, or where good cover crop or green manure crops are still grown in the orchard, or where a good grass sod can be maintained.

The need for potash and phosphorus may be present or will be hastened on light-textured and poorly drained soils or those naturally slow in development, on land subject to sheet erosion, on soils which are excessively cultivated and in which the organic matter supply is neglected, or under excessive use of nitrogen fertilizers.

GRAPE SEEDS.

Grape seeds of the varieties Vitis æstivalis, commonly known as summer or pigeon grape; bicolor, Concord and Delaware germinate at a warm temperature, but such germination is extremely sporadic and covers considerable time before a fairly complete germination is obtained, and a much quicker, better and more uniform germination is obtained when the seeds mixed in moist peat are held at about 5 degrees Centigrade (41 degrees Fahrenheit) for three to four months just before they are planted in a greenhouse run at about 70 degrees F., according to the results obtained in a series of experiments conducted by Florence Flemion at the Boyce Thompson Institute of Plant Research, Yonkers, N. Y.

Almost as good results can be obtained by planting grape seeds in a coldframe in fall (in the north, of course, or in sections where cold weather prevails through the winter months), mulching with dry leaves and covering the frame with boards.

Granulated peat moss that had been moistened and wrung out by hand until it crumbled apart readily was used in the tests. This moist medium containing the seeds was placed in bottles and dampened when necessary by the addition of water. The soil used in the flats was a mixture of equal parts of peat moss, sand and sod soil. The greenhouse temperature was about 21 degrees Centigrade—roughly 70 degrees F.

Alternating temperatures were also tested, but were not found advantageous nor practical. Air-dry storage of grape seeds at room temperature prior to planting or to the pretreatment at low temperatures had a variable effect. In the case of the Delaware grape, fresh and stored seeds germinated equally well after being held for three months at 41 degrees F. Fresh and old seeds of bicolor and Concord grapes required a longer pretreatment at low temperature than seeds from the same lot after air-dry storage at room temperature for several months.

Three outdoor conditions were tested—coldframes without cover, coldframes with a board cover and board-covered coldframes within which the flats containing the seeds were mulched with dry leaves. The last-named treatment gave the best results. Some of the seeds in the board-covered and open frames were probably killed by the severe changes in temperature, the mulched condition maintaining a more uniform temperature throughout the winter.

In discussing the experiments, Flemion makes the following recommendations:

"Grape seeds can be germinated

EVERGREEN SEEDLINGS

Shipped fresh dug, in a handy basket pack, that insures safe arrival. Condition, grade and viability guaranteed. Order from this ad at once.

	100	1000	10,000	25,000
Douglas Fir, 2-yr. 2 to 4 ins...	$2.00	$16.00	$140.00	$317.00
Douglas Fir, 2-yr. 4 to 6 ins...	3.00	22.50	200.00	450.00
Biota Orientalis, 1-yr. 3 to 6 ins.....	2.00	10.00	75.00	.....
European Larch, 1-yr. 3 to 6 ins.....	2.00	12.00	....	.....
Ponderosa Pine, 2-yr. 3 to 6 ins.	2.00	15.00	125.00	.....
Scotch Pine, 2-yr. 4 to 6 ins...	2.00	15.00	125.00	.....
Jack Pine, 1-yr. 2 to 4 ins....	2.00	10.00	75.00	.....
White Pine, 1-yr. 2 ins.....	2.00	10.00	90.00	.....
Norway Spruce, 2-yr. 2 to 4 ins.	1.50	6.00	50.00	100.00
Norway Spruce, 2-yr. 4 to 6 ins.	2.00	9.00	80.00	187.50
White Spruce, 2-yr. 2 to 5 ins...	2.00	12.00	100.00	.....
Blue Spruce, 2-yr. 2 to 5 ins...	3.00	22.00	175.00	.....

An exceptionally fine lot for color. Grown from select seed from "Blue" trees.

10 per cent discount for cash before April 1, after that date 5 per cent.

Free Packing in Both Cases.

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SPECIAL CHRISTMAS TREE STOCK

Douglas Fir and Norway Spruce are the most satisfactory varieties for Christmas tree planting.

We offer a special grade for bedding for this purpose.

	1000	10,000
Douglas Fir		
3 to 6 ins....	$16.00	$140.00
Norway Spruce		
3 to 6 ins....	7.00	60.00

Packed free at these prices.

20,000 **ELMS, American, Vase, Moline,** up to 4 inches, transplanted.

4,000 **MAPLE, Norway,** up to 2½ inches, transplanted.

2,000 **WILLOW, Thurlow,** 8 to 10 ft. and 10 to 12 ft.

10,000 **SPIRÆA, Vanhouttei,** 3 to 4 ft. and 4 to 5 ft.

Send for list on many other items.

C. M. HOBBS & SONS, Inc.
Bridgeport, Indiana
Largest Nursery in Indiana. Established 1875.

BARBERRY THUNBERGII SEEDLINGS
1-year
6000, 3 to 6 ins. 8000, 6 to 9 ins.
25,000 **Ampelopsis Veitchii,** 1-year seedlings
2,000 **Ampelopsis Veitchii,** 2-year transplants
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Hydrangea Pee Gee, 3 to 4 ft. and 4 to 5 ft.
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STOCK YOU WILL NEED
Cotoneaster Acutifolia, 2 to 3 ft.
Cornus Paniculata, 18 to 24 ins.
Cornus Sibirica, 3 to 4 ft.
Privet Amoor River North, 2 to 3 ft.; 18 to 24 ins.
Ribes Alpinum, 18 to 24 ins.
Rosa Setigera, 2 to 3 ft.; heavy.
Lonicera Morrowii, 2 to 3 ft.
Lilac Persica, 18 to 24 ins.
Viburnum Americanum, 2 to 3 ft.
Flowering Crab, 2 to 3 ft.; 3 to 4 ft.; 4 to 5 ft.
Polygonum Aubertii, 2-year.
ESCHRICH'S NURSERY, Sta. F, Milwaukee, Wis.

BARBERRY SEEDLINGS 1-year
20,000 **Atropurpurea**
100,000 **Thunbergii**
Also **Barberry Thunbergii** seed
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All sizes from 8 to 10 feet up to 4 inches. Transplanted. Carload quantities our specialty.
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Own roots, heavy bodies
500 4 to 5 ft., 25c; 500 5 to 6 ft., 40c; 600 6 to 8 ft., 50c
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Plainview, Tex.

readily at various temperatures, but the optimum number of seedlings can be obtained within a period of a few weeks when the seeds are given a pretreatment of several months at 5 degrees C. just prior to planting. The seeds collected when ripe should be freed of the pulp, dried and then sorted at room temperature. Since the most effective period of air-dry storage was found to be three to six months, the seeds should therefore be mixed in moist peat moss in midwinter and placed at about 5 degrees C. Little space is required, since a great number of seeds can be mixed with a relatively small amount of moist peat moss. This material placed in a container and covered with cheesecloth needs no special attention while at the low temperature except that it be watered about twice a month. After adding a little water the whole mass should be thoroughly mixed. After three to four months in this condition, the seeds—easily freed of the peat by washing through a sieve—can be planted in the spring either in the greenhouse or outdoors. Anyone having available a cool cellar, an electric refrigerator or an icebox running at about 5 degree C. (41 degrees F.) can use this method. Another method is to plant the seeds in the fall outdoors in coldframes, but the total yield is not so great as when the low temperature pretreatment is employed. In addition, the coldframes involve space and added labor.

"The method of low temperature pretreatment should be of considerable assistance in the germination of grape seeds either in developing new hybrids or for producing a maximum number of seedlings at a given time for understock."

Full description of the experiments was published in an article, "After-ripening at 5 Degrees C. Favors Germination of Grape Seeds," by Florence Flemion, in the issue of Contributions of Boyce Thompson Institute for July-September, 1937.

CONSERVING nitrogen in cow manure in dairy barns by mixing superphosphates with it, especially in the gutters, is recommended by bulletin 419 recently issued by the Vermont agricultural experiment station, Burlington, entitled "Effect of Superphosphates in Conserving Nitrogen in Cow Manure."

SPRING BARGAINS

	Each
• American Linden, 2-in.	$1.35
• White Elm, 2½-in.	1.30
• Sugar Maple, 8 to 10 ft.	.85
• Lombardy Poplar, 8 to 10 ft.	.30
• Niobe Willow, 6 to 8 ft.	.55
• Alpine Currant, 24 to 30 ins.	.30
• Spiræa Thunbergii, 2 to 3 ft.	.14

• Write for complete list just off the press.
SHERMAN NURSERY CO.
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Fine Lining-Out Stock
All No. 1 stock. Priced per 100.

Clematis Paniculata, 1-yr. transplants	$6.00
Hall's Jap. Honeysuckle Vine, 12 to 18 ins.	2.00
American Bittersweet, 12 to 15 ins.	3.00
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Chinese Elm, 2 to 3 ft.; fine stock	2.75
American Linden, 2 to 3 ft.; nice trees	3.50
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Bechtel's, Fl. Crab grafts, Niedzwetzkyana Crab. Floribunda Crab grafts, Prunus Newport. Fine for lining-out, $5.00 per 100.	

Cash please, free packing. 25 at 100 rate.
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Amoor River North Privet Liners
6 ins. to 18 ins., hardy northern-grown, from acclimated **"Mother Blocks."** Do not compare with soft southern stock. $12.50 per 1000, 5000 for $50.00. Packing free. Cash.
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Evergreen Seedlings, Transplants, Maples, Nut and Apple Trees.
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5,000 exceptionally fine, clean American Elm Trees, average 3-inch diameter, to be disposed of for spring planting at bargain price. Wholesale only.
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FUNGICIDE DYES GRASS GREEN.

Scientists have combined the practical with the æsthetic in a new fungicide for the control of brown patch, a disease of lawn and golf grasses. The fungicide not only controls the disease, but dyes the grass any desired shade of green.

The United States Golf Association, through its greens workers, coöperated with the Department of Agriculture in the research work, which was under the direction of Dr. John Montieth, Jr.

The base of the fungicide is malachite green dye. The first solutions—while effective as a fungicide—were an odd shade of blue that did not fit into the color scheme of any greensward. The scientists then found they could match any grass with the proper shade of green by adding about half and half of the malachite green and auramine O, a yellow dye, together with about two per cent of crystal violet, a red dye. This mixture is just as effective as a fungicide as the original dye.

A half ounce of the mixture, costing about 10 cents, diluted with two to five gallons of water is sufficient to spray 1,000 square feet of turf.

The fungicide keeps the grass green from three days to three weeks, depending on the weather. A rain before the fungicide has time to dry washes it off quickly. Too, the color will not stand up so long in hot summer weather as in the winter.

Greens keepers on golf courses have used the fungicide and found that it does not harm healthy grass, and improves both the color of uneven greens and the tempers of crochety members who blame their poor putting on the uneven color of the putting greens. It also has been used on football gridirons and baseball infields.

The fungicide may be applied with an ordinary knapsack spray, or larger equipment if available.

TAKING BUDDLEIA CUTTINGS.

Buddleia cuttings can be taken at almost any time they are available. Ordinarily, quantities will be found on the plants in late summer or early fall, and often October is a good time to take these cuttings in quantity. They should be rooted, potted up and carried over winter in a coolhouse shifting the plants along as necessary and planting them out in the field as soon as frost is past in the spring. If greenhouses are available, stock plants can be potted up during winter and brought along slowly in a coolhouse. Cuttings can then be taken as often as they develop. Cuttings rooted as late as February or early March can be planted in the spring as early as possible, and these will ordinarily make good strong plants by fall.

Hardwood cuttings can be taken just after a frost has defoliated the plants and before the sap has been frozen in the stems. These cuttings are made in much the same way as grape cuttings. They can be buried outdoors deep enough to prevent the frost from reaching them and lined out in the field in spring as soon as danger from frost has passed. However, generally plants from hardwood cuttings are not considered so good as those from softwood cuttings.

A NEW greenhouse and store are being added to the establishment of Byrd Nurseries, Inc., Omaha, Neb.

SHADE TREE CONFERENCE.

Proceedings of the thirteenth national shade tree conference, held at Baltimore, Md., September 1 to 3, 1937, form a well printed book of over 200 pages and contain much of interest to any persons engaged in tree work. Not only does the volume include the papers presented at the conference, but also the stenographer's report of the ensuing discussions, in which there are likewise information and suggestions of value. The editor of the proceedings is A. M. S. Pridham, of Cornell University.

At the Baltimore meeting, Karl Dressel, of Michigan State College of Agriculture, stepped up from vice-president to president, while Richard P. White, whose work as secretary-treasurer was instrumental in building the conference to its present important position, was elected vice-president, since his new duties as executive secretary of the American Association of Nurserymen fully occupy his time and energy. He was succeeded as secretary-treasurer by L. C. Chadwick, of Ohio State University.

The next conference will be held August 30 to September 2, 1938, at the Coronado hotel, St. Louis, Mo., and Vance I. Shield, Box B, Clayton, Mo., is local chairman.

WASHINGTON STATE PLAN.

The outstanding feature of the last meeting of the Washington State Nurserymen's Association was the appointment of a committee to communicate with members throughout the state and request that they form nursery clubs in their respective districts or counties.

To weld a state organization into shape, hold monthly meetings and expect distant members to be in attendance is a tough task.

To overcome this condition, we are requesting that nursery clubs be organized to represent each county or outstanding district. They would solve their own local problems. The presiding officer would become a member of the state association, to be called as a delegate at a meeting where and when necessary. Three-fourths of the yearly dues would be retained by the local club and the remaining one-fourth forwarded to the state association. Once a year each and every club would be represented at the annual convention.

Another innovation being worked and to be brought before the association at the next meeting is the appointment of a member that is a representative in his field or division to work closely with the state department of horticulture. Appointments are to be made by the state department.

For instance, the head of the fruit tree section could instantly contact his members throughout the state, and when advice, help or assistance is needed for the industry, actual facts and conditions could be presented—not guesswork, but positive facts.

The following classifications are being made: Holly, ornamental, fruit trees, narcissus, iris, tulip, perennials, alpines, roses, gladiolus, lilies, landscape, florist, greenhouse growers.

W. L. Fulmer, Pres.

NURSERYMEN showed the greatest gain in retail sales of twenty-four lines of business surveyed in California last month. The average dollar volume of business throughout the state compared with the same month a year ago was a twelve per cent loss.

WITH other property holders of the district, Outpost Nurseries, Inc., Ridgefield, Conn., is seeking an injunction to prevent the Bridgeport Hydraulic Co. from building a dam on the Saugatuck river, thus denying the use of the river for irrigation, etc.

Forest Tree Seedlings

1-year, all sizes in the following varieties:

Green Ash
Catalpa Speciosa
Elm, Chinese
Locust, Black
Locust, Honey
Locust, Thornless
Mulberry, Russian
Osage Orange

GRAPEVINES, Concord, Niagara and Worden
ASPARAGUS, Martha Washington
CHERRY, Montmorency and Early Richmond
Prices upon application

THE WINFIELD NURSERIES
Winfield, Kan.

RED-LEAVED BARBERRY

Strong seedlings of a very good strain, 3 to 6 ins. 6 to 9 ins. 8 to 12 ins.

Rosa Rugosa, seedlings, 6 to 12 ins.
Fagus Sylvatica, seedlings, 3 to 5 ins.
Weigela Eva Rathke, 1-year grafts.
Juniperus Meyeri, 1-year grafts.
Taxus Hatfieldii, 1-year grafts.

Ask for complete list now ready.

C. HOOGENDOORN Turner Rd. NEWPORT, R. I.

SEEDS

	Per ¼ lb.	Per lb.
Apple Seed, French Cider Crab	....	$0.85
Quercus, northern acorns, see our ad in January 15 issue.		
Rhododendron ponticum, for understock; oz., $1.50	$4.50	....
Arbor-vitæ, American	.85	2.75
Arbor-vitæ, Oriental	.35	1.25
Hemlock, from its Southern Range.	1.60	4.75
Hemlock, true Northern	1.80	6.00
Pine, Austrian	....	1.25
Pine, Red or **Norway** (resinosa), a fine grade of domestic; new crop seed	2.85	8.50
Pine, White	.60	2.00
Spruce, Canadian (White)	.50	1.75
Spruce, Norway, Lowland Race of Northern Europe, an extremely hardy and vigorous strain, of dark green color	.70	2.25
Spruce, Norway, French seed, the fastest growing strain	.45	1.50
Spruce, Norway, Austrian seed	.30	.90

Seed of **Fothergilla monticola** as described in February 15 issue is available from us.

F. W. Schumacher, *Horticulturist*
P. O. Box 131, Jamaica Plain, Mass.

●STRAWBERRY PLANTS

New Ground Grown, healthy strong plants. Millions of them and quick service.

$1.50 per 1000 *Satisfaction Guaranteed*

JOHN LIGHTFOOT
BIRCHWOOD, TENN.

Retinispora Aurea and **Pisifera**, 4 to 5 ft., B&B. 75c.
White Pines, in all sizes; **Rhododendrons**, **Old English Boxwood** and **American Boxwood**, **Tulip**, **Pin Oak**, **European Plane**, in all sizes.
Wanted — **Strawberry** and **Raspberry** plants, lining-out **Evergreens** and **Shrubs**.

Jones Nursery Co., Woodlawn, Va.

RASPBERRIES

	1-yr. No. 1 Per 1000
Taylor (Red)	$25.00
Indian Summer (Red)	35.00
Sodus (Purple tips)	22.50
	Per 100
Marion (Purple tips)	$5.00

2-year and other grades

Special prices on larger quantities. Let us quote you on your future needs.

Dunham's Grand Mere Nurseries
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CHIEF and LATHAM RASPBERRIES
ANDREWS NURSERY
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Wholesale Growers of
Grapevines, Currants, Gooseberries, Blackberries and Raspberries
Let us quote on your requirements
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STRAWBERRY PLANTS
No better plants grown than Hill's high-grade, true-to-name, well graded, new and standard varieties. A trial order is convincing. Let us quote you on your requirements.
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Our Pits Compare Favorably With the Best
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Evergreens — Shrubs
Lining-out Stock
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The newest in early-bearing cherry fruits. Dwarf growing. Enormous yielding. Extremely hardy and drought-resistant. Large, choice eating fruits. Delicious preserves, jelly, jam, cordial.
Trial: 3 Large 2-Year, $1.00; 12 Large 2-Year, $2.50; 12 Small, $1.50. All Prepaid.
Send for our list of Newest Plant Introductions.
CARL A. HANSEN NURSERY
Brookings, S. Dak.

Complete list of all the new varieties.
We furnish packing out service for nurserymen and seedsmen. Write for wholesale price list.
E. W. TOWNSEND SONS NURSERIES
Salisbury, Maryland

BULLETINS RECEIVED.

"A Study of the Bulb Mite," by Philip Garman; bulletin 402 of the Connecticut agricultural experiment station, New Haven; dated September, 1937. This is a revision of bulletin 225. The twenty-four pages carry numerous halftones and line drawings and present detailed data on the life history, distribution and host plants of the bulb mite, as well as its enemies and control measures. A method commonly employed for controlling mites consists of hot water immersion at 110 to 111.5 degrees Fahrenheit for two and a half to three hours. A promising alternative consists of vapor heat treatment at an average temperature of 113 degrees F. (111 to 115 degrees) for two hours.

"Damping-off Control in Illinois," by K. J. Kadow and H. W. Anderson; circular 481 of the University of Illinois agricultural experiment station, Urbana; dated November, 1937. Although the excellent information offered pertains to vegetable seeds and seedlings, it can be applied with advantage to flower seed crops. The importance of treating seeds rather than soil is stressed, and since the former is much more easily and inexpensively done, this information will be welcomed by all growers. Cuprous oxide (red copper oxide), copper sulphate, Semesan and zinc oxide are the materials recommended. Different seeds require different treatments. For example, copper treatments should not be used on seeds of cruciferous plants, such as stocks, candytuft, sweet alyssum, cabbage, kale, kohl-rabi, etc. The commercial cuprous oxides and Semesan should be used exactly as recommended by the manufacturers. Poor stands of seedlings are more frequently due to preëmergence damping-off than to poor seeds. This phase of the disease is more common and important than the familiar post-emergence phase, which causes seedlings to topple over. The former is seldom recognized, because the seedlings are killed before they reach the surface of the ground and sometimes even before the sprout emerges from the seed.

"MANURES AND MANURING."

Bulletin No. 36 of the Ministry of Agriculture and Fisheries of Great Britain, entitled "Manures and Manuring," is now in its seventh edition. Considerable revision has been effected in each edition, and in this one, H. V. Garner, M.A., B.Sc., of the Rothamsted experimental station, has not only made a number of further alterations and additions, but he has considerably expanded the preliminary section with the object of providing a more comprehensive review of the principles governing the manuring of farm crops. It is distributed in this country by the British Library of Information at New York.

This edition is published in book form, with cardboard covers, and contains six pages of advertisements in addition to 104 pages of material, which are divided as follows: Eleven pages, general principles of manuring; thirty-seven pages, organic manures; twenty-four pages, artificial manures; twenty-eight pages, purchase and use of artificial manures; four pages, appendix—note on fertilizers and feeding stuffs act, 1926. The price is 65 cents.

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GRAPEVINES,
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Our Specialties Are
GRAPEVINES, CURRANTS, STRAWBERRIES
General line of Small Fruit plants
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GRAPEVINE SPECIALISTS
We also propagate Currants and Gooseberries. Our experience in growing these items since 1890 enables us to supply our customers with quality stock.
We invite your inquiries.
The F. E. Schifferli & Son Nurseries
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STRAWBERRY PLANTS
Get our low prices on DORSETT, FAIRFAX, PREMIER, BLAKEMORE, DUNLAP, AROMA and CATSKILL.
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HERBS
Pot-grown plants; over a hundred varieties. Dried Herbs for Flavoring and Fragrance. Other plants of unusual character and with the charm of old-time gardens.
Write for Catalogue
Weathered Oak Herb Farm, Inc.
BRADLEY HILLS, BETHESDA, MARYLAND

ROSE REGISTRATIONS.

The American Rose Society's registration committee has approved applications for registration of the following roses. Notice of these registrations has been sent to rose organizations in foreign countries and trade papers. If no objections are raised before March 23, 1938, the registration of these names will become permanent as of that date.

Rose Anne. Climbing hybrid tea. Originated by Capt. George C. Thomas, Jr., and to be introduced by the Armstrong Nurseries, Ontario, Cal. Said to be a seedling of Francesca x Margaret McGredy, with a flower of the type of Margaret McGredy, of medium size, cupped, borne several blooms together on long stems. The semidouble flowers have a moderate fragrance. Color is orange apricot, slightly more yellow at the base. Plant is described as a vigorous climber, with large, normal green, disease-resistant foliage and an ordinary quantity of thorns. Growth to fifteen feet. Said to be an abundant, continuous bloomer from May to November. It is supposed to be slightly tender.

Climbing Innocence. Climbing hybrid tea. Discovered by J. A. Armstrong; to be introduced by the Armstrong Nurseries, Ontario, Cal. Said to be a sport of Innocence, with flowers like its parent on a vigorous climbing plant with leathery, normal green foliage of medium size. It is said to be a profuse, intermittent bloomer from May to September.

Flash. LC. Originated by R. Marion Hatton, Harrisburg, Pa., to be introduced by the Conard-Pyle Co., West Grove, Pa. Said to be a seedling of Rosella x Margaret McGredy. The medium-cupped flowers bloom singly on medium stems. Flowers are double and have a slight fragrance. Color is velvety, deep scarlet, with Austrian yellow on the outside of the petals. The plant is said to be a strong grower to eight feet, with leathery, bronze, disease-resistant foliage of medium size. Blooms for three weeks in June.

Yellow Dot. Hybrid tea. Originated by the Joseph H. Hill Co., Richmond, Ind., and to be introduced by it. Said to be a seedling of Rapture x Betsy Ross. Flower is described as medium flat, three inches in diameter, with forty-five petals, light orange yellow inside and apricot orange and coral red outside. It is said to have moderate old rose fragrance. The flowers are borne singly and produce freely. Rose is said to be similar to Mrs. Aaron Ward, but smaller and a free grower all during the season.

Lucile Hill. Hybrid tea. Originated by the Joseph H. Hill Co., Richmond, Ind., and to be introduced by them. Said to be a seedling of an unnamed seedling x Sweet Adeline. Flower is described as large, full, six inches in diameter, with twenty-five petals, spinel pink, with a slight tea fragrance. Flowers are borne singly and are long-lasting. Rose is similar to Sweet Adeline, but deeper in color.

Guinee. Climbing hybrid tea. Originated by Charles Mallerin, Varces, France. To be introduced in the United States by the Conard-Pyle Co., West Grove, Pa. Said to be a seedling of Souv. de Claudius Denoyel x Ami Quinard and said to be a vigorous climber with dark, leathery foliage, free in growth and moderately hardy. Flower is described as flat, four and one-half inches in diameter, deep maroon in color. The form, color and fragrance are claimed to be unmatched by those of any other climbing rose.

Golden State. Hybrid tea. Originated by Francis Meilland, Tassin-les-Lyon, France. To be introduced in the United States by the Conard-Pyle Co., West Grove, Pa. Said to be a seedling of Souv. de Claudius Pernet x (Charles P. Kilham x unnamed seedling). Plant is described as upright and compact, with large, rounded, olive green, leathery foliage. Flower is described as cupped, finishing cactus, five inches across, forty to fifty petals, maize and buff yellow with a heart of Mikado orange. Clove pink fragrance. Flowers are borne singly and several together, almost continuously.

Mme. Henri Guillot. Hybrid tea. Originated by Charles Mallerin, Varces, France. To be introduced in the United States by the Conard-Pyle Co., West Grove, Pa. Said to be a seedling of Rochefort x an unnamed seedling of Austrian Copper. Plant is described as bushy and slightly sprawly, with glossy and leathery bronze foliage. Flower is described as urn-shaped, four inches in diameter, forty-five petals, watermelon to raspberry pink, with a spicy fragrance. Borne singly.

Ramon Bach. Hybrid tea. Originated by P. Dot, San Feliu de Llobregat, Spain. To be introduced in the United States by the Conard-Pyle Co., West Grove, Pa. Said to be a seedling of Luis Brinas x Condesa de Sastago. Plant is vigorous and upright, with large, glossy foliage. Cupped flower, four to five inches in diameter, with forty to sixty petals. Color is coppery orange, fawn or buff. Fragrance is fruity.

Golden Sastago. Hybrid tea. Discovered by P. Dot, San Feliu de Llobregat, Spain. To be introduced in the United States by the Conard-Pyle Co., West Grove, Pa. Said to be a sport of Condesa de Sastago. It is said to be exactly like its parent, except in color, which is a soft, clear yellow.

Miss America. Hybrid tea. Originated by J. H. Nicolas. To be introduced by the Jackson & Perkins Co., Newark, N. Y., and said to be a seedling of Joanna Hill x S. M. Gustave V. Reported as a vigorous plant with dark green, leathery foliage, free and hardy. An open flower four inches in diameter, seventy-five to one hundred petals. The color is buff with opalescent variations. Flowers borne singly and several together. Said to be perfectly hardy over a wide range.

McGredy's Triumph. Hybrid tea. Originated by Sam McGredy & Son, Portadown, Ireland. Introduced in the United States by the Jackson & Perkins Co., Newark, N. Y. Said to be the progeny of unnamed seedlings. Reported to be an upright, bushy, vigorous plant with glossy, bronze foliage, free and hardy. High-centered flowers six inches in diameter, with twenty-five petals. Geranium-red, flushed orange. Moderate fragrance. Flowers borne several together. Is said to have distinctive coloring.

Goldenes Mainz. Hybrid tea. Originated by Wilhelm Kordes Sohne, introduced by the Jackson & Perkins Co., Newark, N. Y. Said to be a seedling of Fontanelle x Julien Potin. Plant is described as bushy, with glossy, wrinkled foliage, free and hardy. An open flower four and one-half to five inches in diameter, with thirty-two petals. Color is dandelion-yellow. Fragrance is slight. Flowers are borne clustered. Said to be practically disease-free.

Mohican. Hybrid tea. Originated by J. H. Thompson's Sons, Kennett Square, Pa., and introduced by them. Said to be a cross of an unnamed seedling x Briarcliff. Plant is vigorous, strong and upright, with large dark green, leathery foliage. Flower is full, four to five inches in diameter, thirty-five to forty petals, cherry red. Slight fragrance. Borne singly.

Gartendirektor Otto Linne. Climbing polyantha. Originated by Peter Lambert, Trier, Germany. Introduced in the United States by the Conard-Pyle Co., West Grove, Pa. Said to be a seedling of Robin Hood x Rudolph Kluis. An upright, bushy plant with abundant leathery foliage. An open flower one and one-half inches in diameter, with thirty-five petals, dark carmine pink with a yellowish white base. Fragrant, blooming in clusters of thirty on long stems.

R. Marion Hatton, Sec'y.

F. S. BAKER, of the North-Eastern Forestry Co., Cheshire, Conn., is back at his office after a lengthy siege of the flu last month.

A BRANCH of the Norman Nurseries, Costa Mesa, Cal., was recently opened at Laguna Beach, Cal. Ernest L. Bowen will be in charge.

Two California nurserymen, Rudolph Watson and Paul A. Lerner, have opened a new establishment, the Bay Nursery, on El Camino Real, San Mateo.

H. A. HYDE, nurseryman at Watsonville, Cal., conducts a 26-piece orchestra one evening each week, thus combining his interests in two great gifts to mankind, music and flowers.

REPORTING that business for spring "looks pretty good," the Sherman Nursery Co., Charles City, Ia., states retail sales during January and February ran nearly thirty per cent ahead of last year. Some landscape orders of good size were also booked for spring delivery. Wholesale business has been good, with a heavy sale of evergreens for lining out.

SOUTHWESTERN NEWS NOTES.

F. A. Prichard and L. A. Coleman have established a nursery known as the Home Landscape Service, at Fredonia, Kan. They advertise a complete line of nursery stock.

Minor Roughton announces that he is starting a nursery at Fowler, Colo. Fowler is in the heart of the fruit and vegetable growing district of the famous Arkansas river valley.

Guy Mathews has opened a nursery sales yard at a corner of Huntoon and Miller streets, Topeka, Kan. Mr. Miller for four years was with the Kansas Evergreen Nurseries, at Manhattan, Kan., and during the past two years has been with the Topeka branch of that firm.

E. L. Davis, landscape gardener in charge of roadside improvement contracts for the Cook Gardens, Ottawa, Kan., has entered the Norton sanitarium to be treated for tuberculosis.

Paul Pritchard has opened a seed and nursery store on East Second street, Ottawa, Kan., which he will carry on in addition to his mail-order business.

Baker University, Baldwin, Kan., secured the services of Harry R. O'Brien, journalist and nationally known "Plain Dirt Gardener," of Columbus, O., for a series of talks on home, highway and city beautification, February 17 and 18. Garden lovers from Kansas and Missouri were invited by the sponsors and coworkers—one of whom was Mrs. Frank Jones, Lawrence, Kan., president of the Kansas Garden Association, whose husband is a partner in the Mount Hope Nurseries — but unfortunately bad weather cut down the attendance.

William Frowe, landscape gardener, Lawrence, Kan., has the contract for planting the grounds, planned by Hare & Hare, Kansas City, Mo., of the estate of the former governor, Alf Landon, at Topeka, one of the show places of the state.

Mrs. Mark Wheeler is starting a nursery business at Milford, Ia.

J. W. Tonkin, recent graduate of Kansas State College, has been employed by the Mount Hope Nurseries, Lawrence, Kan., to head the landscape department.

Herman Goins has started a nursery at Richmond, Kan. It will be devoted largely to the production of ornamental stock. Mr. Goins' son is associated with him.

APPLE TREES

Very vigorous well branched 2-year stock — 10% discount on prices shown

	⅞-in. 12c	1-in. 15c	1⅛-in. 18c	1-in. 21c
Black Ben Davis	126	469	845	822
Ben Davis (red)	258	386	100	240
Blood Red Delicious	587	4142	5070	1182
Early Red Bird	...	538	1840	322
Jonathan	...	3149	2420	328
Mammoth Black Twig	110	439	1149	1659

We will exchange for lining-out stock in Evergreens, Shrubs, Perennials and Bulbs. Write to us and let us know what you have to offer.

BENTON COUNTY NURSERY CO., INC., Rogers, Ark.

SPECIMEN STOCK

Large sizes in TAXUS CUSPIDATA, DOUGLAS FIR, HEMLOCK, RED, WHITE, AUSTRIAN and MUGHO PINE. All ARBOR-VITAES, NORWAY MAPLES and ELMS. *Estimates Given Promptly*

LEWIS & VALENTINE NURSERIES, Inc. ROSLYN, NEW YORK Phone, ROSLYN 256

Keep the Wheels Turning

Stop and go driving is hard on an automobile and wasteful of gasoline.

The steady pace that keeps the wheels turning makes the most of your car's momentum.

Advertising that starts and stops lacks the drive and power of space used steadily every month of the year.

Readers are as interested in one issue of the American Nurseryman as in another. They read every one in the year.

Buyers feel a familiarity with a firm whose name is seen regularly in these pages. That feeling results in more orders for consistent advertisers.

If you want your sales dollars to go farther, keep your advertising running as steadily as you like to drive your motor.

Note the saving, too, on term rates:

	1 time	12 times	24 times
One inch	$2.25	$2.00	$1.90
Two inches	4.00	3.50	3.00

(Same rate applies on larger spaces)

AMERICAN NURSERYMAN
508 S. Dearborn St.
CHICAGO, ILL.

NORTH JERSEY METROPOLITAN.

Secretary Reviews Year's Work.

The North Jersey Metropolitan Nurserymen's Association held its annual ladies' night dinner at the Robin Hood Inn, Clifton, N. J., February 25. These social activities are eagerly looked forward to by the members and their wives. Invited guests were Dr. Clyde C. Hamilton, state entomologist; Ben Blackburn, landscape specialist of the college extension staff; Col. Edward Phillips, and H. Wettyen, R. Stone and R. Harmon, who are the Passaic, Bergen and Essex county agricultural agents. Frank Daniels and his 7-piece orchestra of high school boys furnished the music. During the course of the evening, the entertainment committee brought out a bingo game with ten prizes, so that the ladies were amused whether they danced or not.

This annual social affair is one of the many activities sponsored by the association. Through them the members have gained a closer relationship in the past three years. The annual meeting is held the second Thursday in March, for the election of officers. One of the achievements of the association is the successful launching of Garden Craft, an educational paper for the clients of members of the association. The material for the paper is compiled by the entire organization, edited by H. Deverman, E. Steffens and E. Zagers and printed with the association's funds. It acts as a guide in the various problems of gardening, contains timely hints and introduces new plant material.

Committee's Work.

Through the planting committee, headed by C. Kievit, M. Snel and P. Hoverman, the members have planted several public projects coöperatively, paid the members for their labor and rolled up a substantial revolving fund. This fund is used to support a combined buying power, enabling the smaller nurserymen to buy tools, burlap, peat moss, grass seed and other necessary supplies at prices not available to them before.

The catalogue committee, headed by S. Blair, M. Snel and C. Kievit, has compiled a uniform catalogue used throughout the association and printed by it. This helps the smaller nurseryman have a catalogue with his firm name printed on it, at a price he can afford.

A library committee, led by H. Deverman, O. Wirdel and P. Hoverman, is gathering horticultural books and material on various books which will interest the members. The committee hopes to have soon a centrally located place for members to gather and use these books as they wish.

During the winter months, the president, Charles Hess, with the honorary members, H. Wettyen, R. Stone and R. Harmon, the county agricultural agents, has put on an educational program twice a month, drawing on the state experiment station at New Brunswick for material and speakers. This has helped the younger nurserymen, as well as enabled the older men to recall some of the practices they had long forgotten.

As we are nearing our annual meeting and reviewing achievements, I often wonder about that fellow outside who says, "What does an association do for its members?" I wonder if he is blind.

William Hallicy, Sec'y.

Quick Facts on HORMODIN "A"

The new root-forming chemical developed by Boyce Thompson Institute for Plant Research

Hormodin "A" stimulates rapid root growth on leafy cuttings, thus assuring quicker and better rooting in higher percentages than ever before possible. Many species heretofore considered impossible to propagate from cuttings may be rooted successfully when treated with Hormodin.

By hastening the propagation of slower-rooting species to much less than normal time, Hormodin saves bench space, time, and money. It permits transplanting some varieties of cuttings directly from the bench to field conditions.

Hormodin treatment is simple. It comes in liquid form and is applied as a dilute water solution. The cost is only a fraction of a cent per cutting. To assure root-forming potency, every batch of Hormodin is standardized chemically by the Merck Control Laboratories and physiologically by the Boyce Thompson Institute For Plant Research, Inc.

Photographic Proof

This photograph vividly proves the root-inducing power of Hormodin. Both the treated and untreated cuttings were in the same propagating bench, under the same conditions, the same length of time. Hormodin alone is responsible for the more profuse root growth.

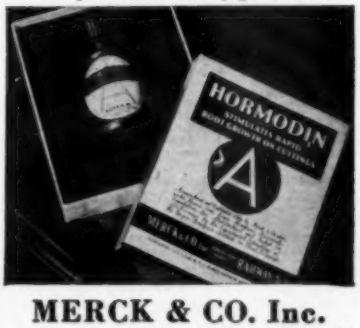
NOT TREATED ***TREATED***

PERNET ROSE

Illustrated Booklet Free

Nurserymen and growers are invited to write for free illustrated booklet telling how Hormodin saves money and labor.

Packed in five sizes, and sold on the basis of Boyce Thompson Institute units of effectiveness.



MERCK & CO. Inc.
Manufacturing Chemists
RAHWAY, N. J.

CATALOGUES RECEIVED.

[In writing for a copy of any of the catalogues reviewed below, please mention that you saw it described in The American Nurseryman.]

Home Nursery, La Fayette, Ill.—Liberally illustrated with half-tones, the fifty-first annual catalogue, of thirty pages, offers various kinds of nursery stock and perennials, at retail. A service for decorating cemetery lots is explained.

Harmon Nursery, Prospect, O.—Printed folder as wholesale price list of lining-out stock, hardwood cuttings and other nursery material, including grafted French lilacs and fruit trees.

Linwood Nurseries, Linwood, N. J.—Folder as wholesale list of dahlias—1938 varieties, honor roll sorts and miniatures and pompons.

Forest Nursery Co., McMinnville, Tenn.—Pocket-size catalogue for spring of flowering shrubs, forest and shade trees, vines and creepers, fruits and coniferous and broad-leaved evergreens. Collected material, including shrubs, trees and ferns, is offered, as are tree cuttings and seeds. There is an index.

McGregor's Bros. Co., Springfield, O.—With covers in color and innumerable other illustrations inside, the 1938 yearbook presents a great variety of material for the garden, including roses, dahlias, perennials, vines, shrubs and flower seeds. In a separate wholesale list the firm offers particularly chrysanthemums, dahlias and roses in many varieties, although much other stock is included.

Waynesboro Nurseries, Inc., Waynesboro, Va.—Containing some illustrations in color and many more in black and white, the new Waynesboro planting guide is an attractive catalogue of forty pages, plus an index. Fruit trees, small fruits, shrubs, hedging, evergreens, including broad-leaved; shade and ornamental trees, and roses make up the nursery material. Also handled are perennials, dahlias, lilies and other bulbous stock.

Princeton Nurseries, Princeton, N. J.—The 1938 spring wholesale list is a pocket-size catalogue of seventy-two pages, with some illustrations. The list, especially clearly printed, is alphabetical, starting with abelia and concluding with xanthorhiza. Among the genera offered in considerable variety are acer, azalea, juniperus, malus, picea and thuja.

William Borsch & Son, Inc., Maplewood, Ore.—With covers in color and many other illustrations in black and white, the 62-page catalogue offers in one long alphabetical list alpines and perennials, the enumeration starting with achillea and ending with xerophyllum. In separate lists are dwarf trees and shrubs and dwarf conifers. Also handled are seeds of alpines and other perennials.

The Monroe Nursery, Monroe, Mich.—Trade list of I. E. Ilgenfritz' Sons Co., covering nursery stock listed alphabetically according to classification. Illustrations show typical evergreen stock offered. Mentioned as an outstanding introduction is Ligustrum atrovirens, a semi-evergreen privet from Holland. An illustrated circular is inclosed offering useful nursery equipment, including Dowax, a plant digger, a tree carrier and a grader for fruit trees.

Bristol Nurseries, Inc., Bristol, Conn.—Containing thirty-six large pages, liberally illustrated with color work and other pictures, is "Garden Novelties for 1938." The first nine pages are devoted to chrysanthemums, stressing the firm's Korean hybrids, old and new; next come perennials, with asters and hemerocallis prominent; irises, peonies, roses, herbs and flowering shrubs.

Good & Reese, Inc., Springfield, O.—"The 1938 Garden Guide" is a golden anniversary edition of forty-eight pages and a cover printed in colors. A retail mail-order catalogue, this one lists a multitude of items both for outdoors and in, with a good sprinkling of novelties and a number of collections.

Verhalen Nursery Co., Scottsville, Tex.—A 24-page pocket-size booklet, illustrated, contains the wholesale offerings of nursery stock of this firm. Standard and unusual stock are included, with emphasis on evergreen items. There are a page of patented roses and a special listing of Wisteria chinensis.

Forest Nursery Co., McMinnville, Tenn.—Wholesale price list No. 3, covering lining-out and finished nursery-grown stock, forest and shade trees, hardwood cuttings, evergreens, vines, tree seedlings, shrubs, fruit trees and seeds. Collected hardy flowering shrubs, trees and vines are also offered.

Charles H. Williams Nurseries, Exeter, N. H.—Containing twelve pages and offering collected trees, shrubs, vines, bulbs and plants comes a wholesale price list. Among the plants are ferns, orchids and hardy perennials. The retail catalogue, of thirty-two pages, offers the same classes of material in greater variety.

Winona Nursery Co., Winona, Ont.—A neat 64-page catalogue offers nursery stock at wholesale rates, the lists beginning with rose novelties. Other roses, evergreens, ornamental trees and shrubs, vines, fruits and also perennials are presented. An attractive folder, "New Roses for the Garden," is in color, showing recent varieties and giving planting instructions. The reader is advised to order the roses through his own nurseryman, the Winona firm doing a wholesale business exclusively.

Daniels Nursery, Inc., Long Lake, Minn.—Forty pages of planting suggestions and descriptions of material mark this catalogue. Emphasis is said to be placed on hardy plants for the northwest, including some new varieties that have been grown and tested in Minnesota. A recounting of Mr. Daniels' 30-year trade experience appears at the front.

Fairview Evergreen Nurseries, Fairview, Pa.—Wholesale list of nursery stock offered by F. C. Hetz & Sons. There are twenty-five pages devoted to offers of a wide range of material and illustrations of the firm's stock. A note states the firm has 100 acres of evergreens suitable for balling. Seedlings and transplants are among the items, also vines and perennials.

Corliss' Nurseries, Gloucester, Mass.—Wholesale price list, consisting of twenty-eight pages, offering chiefly perennials and rock plants. Boxes call attention to numbers of special items. The retail catalogue is illustrated and offers comprehensive stock for the garden, including nursery material, perennial plants and annual seedlings.

Le-Mac Nurseries, Hampton, Va.—Folder listing wholesale prices of azaleas and other broad-leaved evergreens, with some lining-out stock.

Frank H. Rose, Missoula, Mont.—A circular listing special wholesale prices on active and dormant alpines, native bulbs and ferns. The prices are set to induce more general listing of these items in retail catalogues.

Sherman Nursery Co., Charles City, Ia.—Evergreens, forest seedlings, shade and ornamental trees, fruit trees, shrubs, vines, roses and such material as lilies, peonies, phloxes and other perennials are presented in a wholesale price list, of thirty-two pages. An airplane photograph of part of the nursery is reproduced on the back.

Van der Voot Nursery, Taunton, Mass.—Twelve-page booklet as wholesale price list of hardy trees, shrubs and evergreens. The material is alphabetically listed, and there are offers of some perennials. Among the nursery stock are Fothergillas major and monticola.

Southern Nursery & Landscape Co., Winchester, Tenn.—In separate lists in a 12-page booklet are offered at wholesale fruit trees, evergreens, broad-leaved evergreens, shrubs, ornamental trees, shade trees, roses and peach seeds.

Joseph F. Martin Co., Painesville, O.—A catalogue of fifty-two large pages of perennial plants, for the trade only. The lists include a number of novelties, some of which are illustrated. Offered in especially great variety are asters and chrysanthemums. Irises, lilies, peonies and roses are also listed. There are several large photographs of made-up designs demonstrating the use of some of the material presented.

Kimberly Nurseries, Kimberly, Ida.—With a picture of an attractive rock garden on the front cover, the Kimberly retail catalogue offers the usual nursery stock, including fruit trees, and also perennials and bulbous material.

Bobbink & Atkins, Rutherford, N. J.—Pocket-size illustrated trade list, presenting nursery material. Given special mention is Azalea Rutherfordiana, to be available in the fall. Other stock stressed includes a number of other azaleas, clematises, magnolias, named hybrid rhododendrons, wisterias, roses and hydrangeas. Among an extensive list of hardy perennials are numerous asters and chrysanthemums. Other groupings offer greenhouse and decorative plants, and ferns.

American Forestry Co., Pembine, Wis.—Seeds of trees, shrubs and vines are an important part of the listings in a 12-page catalogue of nursery material, which also includes transplanted stock; roses, peonies, rockery plants, perennials and ferns are added. Among the hardwood stock are evergreen and deciduous genera, fruit stock and small fruits.

Chase Nursery Co., Chase, Ala.—Dated February 25, a grade count bulletin contains sixteen pages, offering roses, shrubs, vines, conifers, broad-leaved evergreens, lining-out stock and potted plants.

Herbst Bros., New York, N. Y.—Included in the catalogue of tree and shrub seeds for nurserymen are seeds of a number of oriental varieties not previously listed by the firm. Besides seeds of nursery stock are offered seeds of vegetables and flowers, with lilies and petunias listed in particularly numerous varieties.

Portland Wholesale Nursery Co., Portland, Ore.—Several mimeographed pages as surplus list of fruit trees, small fruits, shade trees, shrubs, evergreens, vines and roses. Included are fruit tree seedlings.

Weston Nurseries, Inc., Weston, Mass.—Well laid out and printed catalogue as 1938 yearbook, offering azaleas, chrysanthemums, evergreens, trees, shrubs, vines, fruit trees and perennials. In numerous varieties are presented hybrid lilacs, named. Rhododendrons are other stock stressed, also flowering crabs. Ferns, irises, peonies, phloxes, lilies and hardy asters and chrysanthemums are listed.

Buntings' Nurseries, Inc., Selbyville, Del.—Pocket-size catalogue of thirty-six pages as wholesale price list, offering fruit trees, small fruits, perennials, flowering shrubs, vines, hedging, roses, cannas, shade and ornamental trees, evergreens, broad-leaved evergreens and an alphabetical list of lining-out stock embracing a miscellany of nursery material. At the back is a map of the environs of Selbyville, showing motor roads to near-by cities.

J. V. Bailey Nurseries, St. Paul, Minn.—Fruits shown in their luscious colors are the subject of the first half of a generously illustrated catalogue for home gardeners. Flowering shrubs, vines, roses, ornamental trees and evergreens fill the rest of the publication.

Perennial Nurseries, Painesville, O.—Attractive 12-page booklet giving trade prices of perennial plants, listed alphabetically. Among the stock are hardy chrysanthemums, ferns and day lilies.

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Nurseryman's Library

"A nurseryman's library is not complete without books on plants, plant propagation and plant handling," said George A. Filinger, of Kansas State College, before the Western Association of Nurserymen. Here is the list he suggested:

STANDARD CYCLOPEDIA OF HORTICULTURE, by L. H. Bailey. $15.00.

THE NURSERY MANUAL, by L. H. Bailey. $3.00.

MANUAL OF CULTIVATED PLANTS, by L. H. Bailey. $7.00.

CULTIVATED CONIFERS OF NORTH AMERICA, by L. H. Bailey. $7.50.

TREES IN WINTER, THEIR STUDY AND IDENTIFICATION, by A. F. Blakesley and C. D. Jarvis. $2.50.

NURSERY SALES AND MANAGEMENT, by Nelson Coon. $1.50.

TEXT BOOK OF DENDROLOGY, by W. M. Harlow and E. S. Harrar. $4.50.

THE BOOK OF SHRUBS, by A. C. Hottes. $3.00.

THE BOOK OF TREES, by A. C. Hottes. $3.50.

PLANT PROPAGATION—999 QUESTIONS ANSWERED, by A. C. Hottes. $2.00.

MODERN NURSERY, by A. Laurie and L. C. Chadwick. $5.00.

THE PLANT BUYERS' INDEX, by J. W. Manning. $10.00.

MANUAL OF CULTIVATED TREES AND SHRUBS HARDY IN NORTH AMERICA, by A. Rehder. $5.00.

MANUAL OF TREES OF NORTH AMERICA, by C. S. Sargent. $5.00.

STANDARDIZED PLANT NAMES. $5.00.

NURSERY COST FINDING, by John Surtees. $7.50.

SEEDING AND PLANTING IN THE PRACTICE OF FORESTRY, by J. W. Tummey. $5.00.

HARDY SHRUBS, by F. A. Waugh. $1.25.

MANUAL OF TREE AND SHRUB INSECTS, by E. P. Felt. $3.50.

DISEASES OF ECONOMIC PLANTS, by F. L. Stevens and J. G. Hall. $3.90.

These books can be obtained, at the publisher's price indicated, from

AMERICAN NURSERYMAN
508 S. Dearborn St., Chicago, Ill.

RUYS' GOLDEN JUBILEE.

March 15 is the fiftieth anniversary of the founding of the now famous Moerheim Nurseries, at Dedemsvaart, Holland, by B. Ruys.

In 1888 including about five acres, the nursery grounds now cover 120 acres, eighty-five of which are exclusively planted with hardy perennials and alpines. The firm's business has expanded all over the civilized world. Not only in Dutch, but also in English, French, Swedish, Danish and Spanish catalogues were issued.

Moerheim achieved its reputation by raising new varieties; nearly eighty novelties were introduced, seventy-four in hardy perennials and alpines. The first novelty, Campanula persicifolia Moerheimei, is still grown and offered in the trade, while the latest novelty, the first real pink larkspur, Delphinium Ruysii Pink Sensation, crowned this work.

In 1920 the business was converted into a private limited company, under the management of the founder of the business, assisted by his two sons, Dr. J. D. Ruys and Th. Ruys as codirectors.

His friends believe many share their wish to show Mr. Ruys their grateful interest for all he has accomplished, and have formed a committee of prominent persons from seventeen countries to make this anniversary memorable to him. Among those on the committee are L. C. Bobbink, Rutherford, N. J.; E. S. Boerner, Newark, N. Y., and Kenneth MacDonald, Ottawa, Canada.

HORTICULTURAL CONGRESS.

From August 12 to 17, 1938, the twelfth international horticultural congress will meet in Berlin, Germany, to deal with questions on all phases of horticulture from a theoretical and scientific standpoint. Already forty countries, to be represented by about 2,000 members, have signified that they will participate in this congress, the sessions of which will be held in the Kroll Opera building.

Due to the almost endless ramifications of horticulture, the program of the congress is extraordinarily comprehensive. In twenty divisions, experts will present data on current problems relative to growing, cultivation technique and distribution. In addition to questions dealing with pomiculture, olericulture, cultivation of ornamental plants and seed growing, the lecturers will treat questions concerning nurseries, plant protection, tropical and subtropical pomiculture, storage and handling of fruits and vegetables, as well as their influence upon nutrition and medicine. Also, attention to the market regulations established by the Agricultural Estate of Nutrition and problems of garden planning, horticultural technique, floral work and the sale and distribution of flowers will not be overlooked. Special reports will deal with spices, aromatic herbs and medical plants, to the growing of which more attention has been paid in recent years. Relative to the nomenclature of plants, scientists finally desire to come to an understanding.

Therefore, this twelfth congress will offer many new things and will be concluded by a joint visit to the largest German garden show, to be held next summer in Essen (Ruhr), where the members can inspect the practical applications of German horticulture.

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FAMOUS WISTERIA THRIVING.

Every year at blossom time new interest is manifested in the history and progress of the remarkable wisteria vine at Sierra Madre, Cal., which is now said to be the largest one in the world. The vine was planted in 1893 by Mrs. E. C. Burgman, when it was only a tiny shoot purchased from the Pioneer Nursery, Monrovia. In seven years it began to bloom. It grew sometimes as much as thirty-five feet in a single season.

This spring, the eighteenth annual wisteria fête, a civic celebration, will mark the blooming of the vine. During the festival, everyone in Sierra Madre and thousands of visitors from all over the world walk about in a lavender mist, thinking of the fairyland of bloom that covers an acre of trellises on the hill. The big frame house over which the tangled vine twined was torn down a year ago. The vine was then carefully trimmed and placed over trellises and over a white-pillared pergola. When an old tree was blown down by a freak wind three years ago, the vine was untangled from its branches and strung on other trellises. Last month, the 50-year-old pepper tree that supported part of the plant was removed, piece by piece, a victim of oak fungus.

The vine has continued to thrive. Because of its age and its rare beauty, Mrs. W. J. Lawless, present owner of the vine, has built gardens about and under it. Potted plants of rare varieties form effects that are kept at their best the year around. Tropical fruit gardens, a formal Mediterranean rose garden and a memory garden are inspirations of the lady who purchased the vine site to make it a beauty spot to delight the world.

CALIFORNIA NOTES.

Armstrong Nurseries, Ontario, celebrated the fourth annual camellia week February 20 to 27, at which time the public was invited to see the gorgeous blooms of the finest winter-flowering plants. Belle Romana, the striking variegated type; Emperor of Russia, red, and Chandleri elegans, rose-pink, were the three chosen as of special interest.

A. J. W. Pieters, horticulturist of the Germain Seed & Plant Co., talked on "Roses in Your Garden" before a gathering of several thousand in a Los Angeles auditorium. With rose plants on the platform, the selection, pruning, fertilization and general care of the different varieties were demonstrated.

Calceolaria trees are one of the most interesting of the comparatively new "shrubs." It may be called a shrub because the landscape architect would suggest using it as a shrub. The calceolaria tree is a dwarf variety, has evergreen foliage of a soft gray green, slightly tinted purple, and it is not glossy, a feature which seems rather a relief from the glossy evergreens in California gardens. The flower is shaped much like that of a calceolaria, except that it is single, waxy white and smaller. Its botanical name is Bowkeria Gerrardiana, and it is being recommended by Paul J. Howard's Horticultural Establishment, Los Angeles.

The California Nursery Co., Niles, will have its seventh annual outdoor bulb show at the nursery from March 18 to April 17.

One of the interesting spots at the Golden Gate International Exposition to be held in 1939 on Treasure island in San Francisco bay will be an ancient Chinese walled city, and of special interest to those who love nature will be the botanical gardens containing thousands of shrubs, trees and flowers transplanted from the eighteen provinces of China. Lilies, lotus plants, bamboo trees, peonies, azaleas and chrysanthemums will be imported. Special permits will be required to bring these plants through the United States agricultural quarantine. The grounds, which will be landscaped with rockeries, old bronze statues, pavilions, camel's-back bridges and winding lagoons, will be patterned after an old Coromandel screen. Mark Daniels, famed California landscape architect, will be in charge of arranging the gardens.

CAN'T MOVE TREES FROM LAND.

The Appellate court at Brooklyn, N. Y., February 22, reversed the ruling of a Westchester county court that the Amawalk Nursery, Inc., could remove planted trees from the land it occupied after the beginning of two foreclosure suits against the property.

"The nursery cannot be transplanted without removing the section of earth in which they grew, and on no theory can the removal of portions of the land be justified," said Justice Frederick P. Close in the majority opinion.

A bench associate, Justice George H. Taylor, Jr., dissented, commenting that the mortgage-owner never parts with the title until the foreclosure deed is delivered. Therefore, concluded Justice Taylor, the mortgage-owner has the right to remove trees and flowers on the land he is about to lose.

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OBITUARY.

Hermann W. Merkel.

Hermann W. Merkel, 64, Pleasantville, N. Y., who was identified with some of New York's largest landscaping projects, died March 1. Mr. Merkel had been general superintendent of the $65,000,000 Westchester county park system since its establishment in 1925. Previously he had been superintendent of the New York zoölogical park for twenty-six years.

At Osnabrück, Germany, where he was born, Mr. Merkel received his early training. When he was 16 years of age he came to the United States. Other New York projects with which he was associated were the rehabilitation of several city parks including Central park and the establishment of four C. C. C. camps in Westchester county, one of which is named for him. He is generally credited with having discovered chestnut blight. One of the founders of the American Institute of Park Executives, he served as its president and secretary at various times. Surviving him are his widow, Mrs. Emma Webb Merkel, and two children.

George H. Whiting.

George H. Whiting, a pioneer nurseryman, died February 13 at his home at Bayfield, Wis., where his nursery was located. He was 81 years of age.

Mr. Whiting's early experience was gained on fruit ranches in California. In 1879 he went to Yankton, S. D., where, in 1891, he established the Whiting Nursery Co. Mr. Whiting served for four years on the South Dakota state board of agriculture. After selling his interests in Yankton, he moved to Bayfield, Wis., and operated a nursery there.

His widow, Mrs. Eva Williams Whiting, who was his second wife, survives him, with two daughters. The funeral was held at Yankton February 17, with burial at the Yankton cemetery.

VIRGINIA QUARANTINES.

The eighth revision of the Japanese beetle quarantine regulations in the state of Virginia became effective February 25, 1938. For the first time the entire county of Princess Anne is classified as regulated area. Twelve other counties are included in the regulated area, as well as some additional districts.

Also effective February 25 is the black stem-rust quarantine, prohibiting the growing of varieties of berberis or mahonia determined to be the alternate hosts of the disease in ten counties named and prohibiting the planting and movement of such varieties throughout the state.

MARTIN, PRATT INCORPORATE.

Incorporated recently, the seed department of the Joseph F. Martin Co., Painesville, O., is now known as the Martin-Pratt Seed Co. There is no change in the management, ownership or address, however, the business being conducted by Joseph F. Martin and P. C. Pratt. Orders for seeds and bulbs will be handled by the Martin-Pratt Seed Co., while those for hardy plants should still be sent to the Joseph F. Martin Nursery.

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— TRUE AGAIN THIS ISSUE —

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YOU CAN MAKE MORE SALES HERE

"Send Me One As Soon As You Can Make Shipment"

That statement was made by a visiting nurseryman while watching the tests we were making on a working model. This Hand Truck is the finest mobile tool we have ever made. Our problem in working out this design was to perfect a tool that would reduce the lifting load to a minimum; that would give the greatest efficiency to one man in the nursery or on the job, and be of equal value in loading or unloading cars. The Hand Truck as offered does all of these. The load is balanced over the wheels, thus relieving the operator from any carrying weight. The curved nose permits him to load the truck without tipping the ball forward. The illustrations show a man handling a 350-lb. ball which he does with speed, ease and efficiency.

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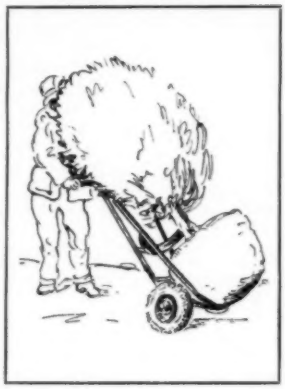
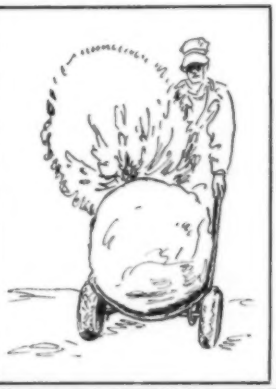
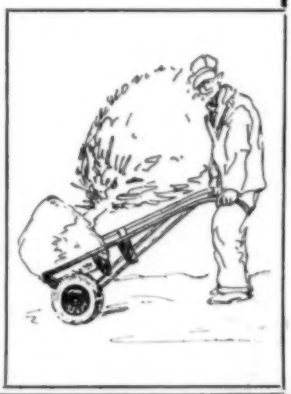


Specifications:

Weight 60 pounds.
All steel constructed.
Electrically welded.
Equipped with pneumatic tires 12"x3". Roller bearings. Specially designed curved nose.
Overall length 63 ins.
Overall width 27½ ins.
PRICED AT $27.50
F.O.B. KANSAS CITY.





THE GARDEN SHOP, Inc.

Manufacturers of Automotive Tree Moving Equipment

4819 Mission Road Kansas City, Kansas

Patent No. 2073695

CLOVERSET POTS

MADE OF HEAVIER STOCK THAN LAST YEAR

Help You Grow Better Stock
Help You Make More Profit
Bring Your Business Up to Date

For Roses, Perennials, Chrysanthemums, Shrubs, Vines and Fruit Trees

CLOVERSET POTS ARE MADE OF ASPHALT IMPREGNATED FIBER STOCK

They are durable They are durable enough to permit growing your plants in them the entire growing season.

They are light They are light enough (they weigh only 1/20 as much as a clay pot of equal soil capacity) to be easily handled.

They do not dry out They are non-porous, which means they will not dry out quickly on hot or windy days, and therefore do not require constant watering as does a clay pot.

They make the plant look larger and better They are so finished in appearance that they add to the attractiveness of the plant grown in them.

Large soil capacity They are large enough to comfortably accommodate the roots in a natural position of any No. 1 Rose Plant and all the most salable size shrubs and small trees.

They are cheap in price They are so cheap that they can be given away with the plant which insures the safe arrival, in first-class condition, of the plant grown in them, to its final destination.

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They eliminate cut-rate competition The use of our Cloverset Pots will enable you to eliminate the competition of the cut-rate drug and department stores, who cannot sell nursery stock in these big pots on account of the excessive weight and the expense of handling.

Send us a sample order Give them a trial and you will always use them.

Send us your order with your remittance, $13.50 for 300 pots, 100 each of 3 sizes, or send for full information about sizes, prices and testimonials from users of our pots.

Carton of samples, by mail for 25c to pay postage

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NURSERYMAN'S TAPE

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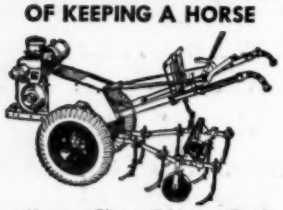
NEW BRUNSWICK, N. J.

Operate a Planet Jr. Tractor this year

FOR $134 LESS THAN THE COST OF KEEPING A HORSE



Plows—Harrows—Plants—Cultivates—Fertilizes—Mows—Dusts—at an astonishingly low operating cost

Handles belt jobs, too!

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Planet Jr. is built for years of trouble-free service. All parts are light and sturdy. Specially constructed motor overcomes cultivation obstacles. Rigid welded frame insures proper alignment. With rubber tires or iron wheels. Write for Catalog.

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429 Glenwood Ave. Philadelphia, Pa.

Planet Jr. GARDEN TRACTOR

SEEDS FOR NURSERYMEN

ORDER NOW

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Pinus ponderosa	.50	1.65
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Pinus sylvestris	.45	1.50
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